FOREST DEVELOPMENT PLAN

for the period

April 1, 2001 - March 31, 2006

MINISTRY OF FORESTS

ARROW FOREST DISTRICT

SMALL BUSINESS FOREST ENTERPRISE PROGRAM

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1. INTRODUCTION

1.1. Forest Development Plan Objectives

The general objectives of the Forest Development Plan are:

- *To provide the public and administering agencies with information, covering a five-year period, on the location and scheduling of proposed roads and cutblocks for harvesting timber, in a manner which demonstrates management for biological diversity, soil conservation, water, fish, wildlife, and other forest resources, and recognizes the economic and cultural needs of peoples and communities, and*

- *To illustrate and describe how objectives and strategies established in higher-level plans for an area or region will be carried through in subsequent operational plans.*

Opportunity is provided for resource stakeholders and the general public to provide comments on new harvesting and road development proposals.

Once approved, the Forest Development Plan provides direction to Ministry of Forests' staff, and consultants under contract, in the formulation of operational plans for industrial activities and forest practices implemented on the ground.

1.2. Arrow Small Business Forest Enterprise Program

This Forest Development Plan (FDP) describes activities under the Ministry of Forests' Small Business Forest Enterprise Program (SBFEP) within the Arrow Forest District. Through the SBFEP, Crown timber is sold to individuals and firms that are registered under the program. Timber is awarded primarily through advertised, sealed tender, competitive bidding. In addition, the program provides opportunities for numerous private sector contractors in planning, specialized assessments, timber cruising and layout, engineering, road construction, silviculture, and forest protection.

The SBFEP is managed on a self-financing basis through the Small Business Forest Enterprise Account (established under Section 109 of the *Forest Act*), and is governed by the *Small Business Forest Enterprise Regulation*. Program revenues in excess of current expenditures and reserves for future reforestation costs are returned to the province's consolidated revenue fund.

Within the Arrow Forest District, the SBFEP is responsible for planning and operations within approximately 30 different administrative (operating) areas located throughout the district. A key map is included in Appendix O which shows the location of these operating areas.

The annual timber apportionment (allowable annual cut) for the Arrow SBFEP is 157,927 cubic metres (m3) (see table 1). Timber is sold through Timber Sale Licences (TSLs) within one of three categories - Category 1 (market loggers), Category 2 (timber processors), and Bid Proposals (for remanufacturing & value-added). In addition, starting in the 2000/2001 cut control year, an apportionment for a Non-Replaceable Forest Licence (NRFL) was initiated. TSLs or NRFL cutting permits may be in the form of individual harvest blocks or multiple blocks and may have a harvest (licence) term of one year or several years.

Table 1 - Annual Timber Apportionment

Annual Timber Apportionment
Small Business Forest Enterprise Program
Arrow Forest District

Licence Category	Annual Timber Volume (m3)	
Category 1 Timber Sales	38,208 m3	24%
Category 2 Timber Sales	30,000 m3	19%
Bid Proposal Timber Sales	64,719 m3	41%
Non-Replaceable Forest Licence	25,000 m3	16%
Total:	**157,927 m3**	

1.3. FDP 5-Year Term and 2-Year Effective Period

The term of this FDP is five years, from April 1, 2001 to March 31, 2006.

This plan will be revised as necessary following opportunity for review and comment by the public, First Nations, licenced resource users, other stakeholders, and resource agencies, prior to being put into effect by the District Manager.

It is intended that this plan will be put into effect by the District Manager of the Arrow Forest District and approved by the Designated Environment Official and remain in effect for two years, at which time it will be revised and updated for an additional five year term.

1.4. Referral Process

The Forest Development Plan (FDP) for the Arrow SBFEP has been advertised in the B.C. Gazette and local newspapers including the Arrow Lakes News, Castlegar Citizen, Trail Daily Times, Nelson Daily News, Pennywise, The Valley Voice and the West Kootenay Weekender. Appendix K contains copies of legal advertisements. The text and appendices of this FDP have also been published on the Arrow Forest District's Internet web site (http://www.for.gov.bc.ca/nelson/district/arrow/smallbus/sbfep.htm).

Referral letters have been sent to a number of individuals, licensed resource users, First Nations, government agencies, and organized groups.

Open-house public viewings take place in the communities of Edgewood, Nakusp, Slocan, Ymir, and Castlegar. The sign-in sheets from public viewings and a copy of referral letters sent, along with mailing lists, are included in Appendix L. Also included in this appendix are copies of correspondence related to the FDP received from agencies, the general public, and licensed resource users, as well as letters of response. An interagency review also takes place, involving staff from Ministry of Forests, other government agencies, and the SBFEP. Comments received and SBFEP responses are included in Appendix L.

Although only Category 'A' development shown in this FDP is formally proposed for approval and to be put into effect, the SBFEP also welcomes comments received on Category 'I' (for information only) roads and blocks to assist with identification of issues and concerns at an early stage.

A summary of changes made to the plan between initial preparation and final submission is included in Appendix M.

Any future amendments to this plan will be documented within Appendix N.

The following table (Table 2) is a summary of the referral, review and comment, and approval steps for this plan.

Table 2 – Referral Summary

Activity	Date	Location (and media with respect to Public Review)	Written Comments received (Y/N)
Referral of FDP			
Government Agencies	June 5, 2001	Listed in Appendix L	Y
First Nations	June 5, 2001	Listed in Appendix L	Y
Licenced Water Users	June 5, 2001	Listed in Appendix L	Y
SBFEP Registrants	June 5, 2001	Listed in Appendix L	Y
Watershed Technical Committees	June 7, 2001	Listed in Appendix L	Y
Licenced Trappers	June 7, 2001	Listed in Appendix L	N
Commercial Recreation Licensees	June 7, 2001	Listed in Appendix L	N
Guide Outfitters	June 7, 2001	Listed in Appendix L	N
Range Tenure Holders	June 7, 2001	Listed in Appendix L	N
Recreation Associations	June 7, 2001	Listed in Appendix L	Y
Public Review			
Advertising	June 7, 2001 June 14, 21, 2001 June 15, 22, 2001 June 13, 20, 2001 June 13, 20, 2001 June 14, 2001 June 13, 20, 2001 June 22, 2001 June 25, 2001	B.C. Gazette Arrow Lakes News Castlegar Citizen Nelson Daily News Trail Daily Times The Valley Voice Pennywise West Kootenay Weekender MOF Internet Web Site	—
Public Viewings	June 25, 2001 June 26, 2001 June 27, 2001 June 28, 2001 June 29, 2001	Edgewood Legion Hall Nakusp Senior's Hall Silvery Slocan Hall, Slocan Ymir Community Hall Sandman Inn, Castlegar	—
Comments Deadline	August 23, 2001	Arrow Forest District Office, 845 Columbia Ave., Castlegar, B.C. V1N 1H3	—
Final Submission for approval	September 24, 2001	Arrow Forest District Office, 845 Columbia Ave., Castlegar, B.C. V1N 1H3	—
Approval	September 25, 2001	Arrow Forest District Office, 845 Columbia Ave., Castlegar, B.C. V1N 1H3	—

2. STRATEGIC PLANS

2.1. Higher Level Plans and Measures to Address Objectives

Section 10(1)(d)(i) of the *Forest Practices Code of British Columbia Act* (FPC) requires that an FDP be consistent with any higher level plan in effect that covers the area of the FDP. A higher level plan is an objective for a resource management zone, landscape unit, sensitive area, recreation site, recreation trail, or interpretive forest site. This plan is consistent with the direction provided in the following higher level plans in effect.

2.1.1. Landscape Units and Biodiversity Emphasis Objectives

Within the Arrow Forest District, Landscape Units and Biodiversity Emphasis Objectives within Landscape Units were formally established by the District Manager effective April 8th, 1998. Biodiversity Emphasis Objectives, in conjunction with Natural Disturbance Types (NDT's), determine the seral stage targets set within each Landscape Unit, for maintenance of landscape level biodiversity. All harvest blocks proposed within this FDP have been assessed against the availability of forest cover age classes to ensure achievement of seral stage targets set for each Landscape Unit.

2.1.2. Objectives for Recreation Sites and Recreation Trails

The Dewdney Trail Management Plan is an approved higher level plan. As well, the majority of recreation sites, recreation trails, and interpretive forest sites within the Arrow Forest District have approved objectives. These objectives will be incorporated into operational plans wherever proposed harvesting or road works are considered near areas covered by the above higher level plans. Operational plans will be consistent with protection of recreational values and with the specific objectives for the individual sites and trails.

2.1.3. Kootenay-Boundary Higher Level Plan Order

This FDP is consistent with the Kootenay-Boundary Higher Level Plan Order (KB-HLP), which took effect on January 31, 2001. The planning areas covered by this FDP are within the Arrow Resource Management Zone of the higher level plan.

This FDP is intended to be consistent with the resource management zone objectives established for:

a) Biodiversity Emphasis;
b) Maintenance of Old & Mature Forest;
c) Mountain Caribou Habitat Requirements;
d) Green-up and Patch Size;
e) Grizzly Bear Habitat (Avalanche Tracks) and Connectivity Corridors;
f) Consumptive-Use Streams;
g) Enhanced Resource Development Zones for Timber;
h) Fire-Maintained Ecosystems; and

i) Visuals.

Specific measures to address these objectives are described in Section 3 of this FDP, where applicable to proposed development.

2.2. Other Plans, Guidelines, and Planning Processes

2.2.1. *West Kootenay-Boundary Land-Use Plan*

The *West Kootenay-Boundary Land-Use Plan* (KBLUP), released in March of 1995, announced government decisions on protected areas and resource management zones. In June of 1997 the KBLUP *Implementation Strategy* (IS) was released, which provided direction and guidelines with regard to general biodiversity, wildlife habitat, community and domestic watersheds, and other resource management issues.

A number of provisions of the KBLUP-IS were included into the Kootenay-Boundary Higher Level Plan Order, effective January 31, 2001. The provisions not brought into the KB-HLP remain government policy and it is intended that this FDP will be consistent with those remaining provisions related to forest development planning.

The document entitled *Memorandum of Understanding between the Ministry of Forests and the Ministry of Environment, Lands, and Parks Regarding Instructions for the Preparation of the 1998 Forest Development Plans* provides interpretation related to the KBLUP-IS and direction for development planning. Supplementary information is also contained within the memorandum entitled *Ministry of Environment, Lands, and Parks Instructions for the Preparation of the 1999 Forest Development Plans.* These provide direction with respect to biodiversity, caribou and grizzly bear habitat, community and domestic watersheds, ungulate winter range, wildlife trees, rare and endangered species and rare old growth areas.

Section 3 of this FDP provides detail with regard to measures that will be carried out to protect forest resources.

2.2.2. Opportunities 2001 – SBFEP Strategy for the Nelson Forest Region

Opportunities 2001 is a five year Regional strategy for the SBFEP, approved by the Assistant Deputy Minister of Forests. The strategy includes some commitments that provide direction to operational planning and therefor this FDP. The strategy commits to:

- "strive for excellence in sustainable forest management";
- "prescribe a full spectrum of harvest systems that are environmentally compatible with the forest ecosystem";
- employ "innovative and alternative forest practices (including non-clearcut methods), where appropriate";
- practice enhanced stewardship of operating areas, which may involve "deactivation and maintenance of non-status roads"; and
- "maintain small scale salvage opportunities".

2.2.3. Operating Area Plans

For some larger SBFEP operating areas, Operating Area Plans – such as Local Resource Use Plans (LRUPs) or Watershed Plans - will be prepared to provide a link between higher level plans and operational "on the ground" planning. These involve setting resource management and development objectives based on existing higher level plans, known local resource values, and input from local stakeholders. Preparation of a plan document also involves assembly of existing resource inventory information, undertaking new technical assessments and resource inventories where deemed necessary, and establishing guidelines and objectives for more detailed operational planning (e.g. total resource development plans and silviculture prescriptions).

For all SBFEP operating areas, determining the area available for road development and timber harvesting, and the general pattern of that development at the landscape or drainage level, will incorporate objectives from approved higher level plans, be based on total chance planning, and consider non-timber values - requirements related to biodiversity, riparian and sensitive site protection, opening size and visual quality objectives, hydrological recovery and green-up, potential terrain hazard, wildlife habitat, and other considerations - based on technical assessments.

2.2.4. Stand Level Planning

Stand level planning will be based on detailed reconnaissance surveys and assessments, considering topography and total chance harvest system planning for optimum road & landing locations. Plans will also incorporate consideration of forest health factors and strategies for stand level biodiversity, wildlife requirements, riparian management and reserves, visual management, windfirmness, regeneration plans, minimizing site disturbance, fire hazard, cultural/archaeological and recreational values, and other non-timber uses. All of these factors will be addressed through total chance / total resource development plans and the silviculture prescription for each harvest block.

In some cases, it may be identified that trees immediately outside of a cutblock boundary must be removed for specific reasons (e.g. danger trees, tailhold or guyline anchors, guywire clearance, blowdown, insect-infested trees, feathering to improve wind-firmness, etc.). Individual trees or small groups may be removed in these situations. In all cases an amendment to the silviculture prescription or a silviculture exemption will be completed where trees are to be harvested outside of the original prescription area.

3. MEASURES TO PROTECT FOREST RESOURCES

Section 10(1)(c)(ii) of the FPC requires that the FDP must specify measures that will be carried out to protect forest resources.

Section 3 of this FDP discusses various forest resources for the planning area, identifies issues that pertain to those resources and states the objectives, management strategies and measures to protect those resources. In accordance with the regulations, not all resources require statements regarding management strategies or objectives and the requirements mandated by legislation are generally not restated in this section. The focus of this section of the FDP is to provide direction to silviculture prescriptions.

3.1. Timber

3.1.1. Forest Health - Bark Beetles

Issues

Mountain pine beetle (*Dendroctonus ponderosae*) attack of lodgepole pine has been the largest cause of catastrophic timber mortality within SBFEP operating areas over several years. Aerial overview surveys and detailed mapping conducted over the majority of SBFEP operating areas in 2000 (see maps in Appendix I) indicate on-going heavy mountain pine beetle infestation in the Gem Hill/Robson Ridge area. Lighter, scattered attack was noted in the Worthington/Eagle Creek, North Whatshan, Mud Lake, Perry Ridge, and Winlaw Creek area.

Scattered attack by Douglas-fir beetle *(Dendroctonus pseudotsugae)* was recorded in the Big Sheep Creek, Erie Lake, McCormick Creek and Perry Ridge areas.

Areas of western balsam bark beetle *(Dryocoetes confusus)* were identified within the higher elevations of the Perry Ridge unit.

Measures to Manage and Protect

A number of the above identified areas of bark beetle infestation are within approved blocks currently being harvested, within scheduled timber sale licences, or planned for development projects. Several areas will be addressed through harvest blocks newly proposed in this plan. Harvest blocks in this category include A65365 (Farron), BS4 (Esling Creek), A65404 (College Creek), A65401 (Limpid Creek), RR4 (Robson Ridge), RR5 (McCormick Creek), RR12 (Halsey Road), and RR13 (Gem Hill).

Recent colour aerial photography and monitoring through forest health overview flights will continue to be used to identify areas of infestation, followed up by ground probes or forest health surveys. Development planning projects will also be given priority in areas of confirmed infestations.

Specifically for mountain pine beetle, where significant areas of infestation have been identified in operable forest it will be addressed through priority harvesting of the pine. In some cases it may be necessary to harvest utilizing clearcut systems, however the preferred option in areas of extensive infestation will be pine removal with retention of other species. Smaller infestations near existing roads will be addressed through salvage harvesting of dead and infested trees under the Small Scale Salvage Program.

3.1.2. Small Scale Salvage

Issues

Small Scale Salvage refers to harvesting of minor volumes of timber which are damaged or which are in danger of being significantly reduced in value or lost or destroyed. This harvesting falls under the definition of "minor salvage operations" within the FPC and the *Operational Planning Regulation*.

Priorities for salvage under this program are:

- trees attacked by insects, where there is potential for spread of an infestation;,
- blowdown or other damaged trees, which may be susceptible to insect attack; and
- salvage of other damaged timber where pest control is not the primary objective.

Measures to Manage and Protect

It is recognized that salvage harvesting should not lead to complete sanitation of forest stands and therefore a certain amount of dead standing timber (e.g. wildlife trees) and down timber, approximating normal endemic levels, will be maintained to contribute to wildlife habitat, stream stability, biological diversity, and soil-building processes. Wherever practical, the timber will be recovered on a single-tree, selection basis with the objective being to minimize the amount of healthy timber that is removed or damaged. While this will lead to localized reduction in coarse woody debris along roadsides and around blocks the effect across the landscape will be minimal.

To ensure consistency in planning for the maintenance of biological diversity, as described in the Biological Diversity section of this FDP, the following strategies will be followed in evaluating Small Scale Salvage candidate areas for approval:

- no salvage harvesting will be approved within candidate old growth management areas (OGMAs);
- no salvage harvesting will be approved within "old" seral stage, in landscape units where old is in deficit;
- in landscape units with deficits in old or "mature plus old", salvage harvesting will be permitted in mature age classes, however greater than 70% of the original stand attributes and volume (including all diameter classes) will be retained in the remainder of the patch or timber type; maintaining the type as mature forest, and

- in all cases, harvest entries will remove single trees or scattered patches (less than 1 hectare openings).

The salvage situations covered by this portion of the plan cannot be identified or predicted in advance, however to achieve forest health and timber utilization objectives, the areas must be harvested expeditiously. For these reasons, and in accordance with Section 10(3) of the FPC and Section 18(2) of the *Operational Planning Regulation*, individual salvage patches are not shown in the FDP, nor will further public notice be provided prior to harvest. In addition, individual small scale salvage sales may be exempted from a number of requirements related to boundary marking, timber marking, road use permits, and fire preparedness plans as permitted under sections of the FPC.

Individual Small Scale Salvage timber sales generally will not exceed a total volume of 500 m3. A field inspection and formal assessment of potential impact to non-timber values will be completed and documented for every salvage area. In most cases referrals will be made to Major Forest Licensees when a Small Scale Salvage application is received over an area within a Licensee's chart or operating area. Referrals to resource agencies will also take place as appropriate. Referrals to the Designated Environment Official (DEO) will be conducted in all cases involving community or domestic watersheds, riparian reserve zones, or where potential wildlife habitat conflicts exist.

3.2. Biological Diversity

Planning for the maintenance of biological diversity (biodiversity) occurs at a variety of levels - provincial, regional, subregional, landscape and stand. Landscape level biodiversity requires the setting of objectives for desired conditions including seral stage distribution, patch size distribution (temporal & spatial), old seral retention, connectivity, stand structure and species composition.

Stand level biodiversity involves management of specific stand attributes or characteristics including stand structure, tree & vegetation species composition, coarse woody debris, and wildlife trees and patches. Forest practices for maintaining stand level biodiversity are set out within silviculture prescriptions, stand management prescriptions, logging plans, and other operational plans.

It is the intent of the SBFEP to management for biodiversity consistent with direction provided in the KB-HLP, the KBLUP-IS, the *Memorandum of Understanding between the Ministry of Forests and Ministry of Environment, Lands and Parks regarding Instruction for the preparation of the 1998 Forest Development Plans*, and the Biodiversity Guidebook.

3.2.1. Biodiversity Emphasis

The KB-HLP formally assigned biodiversity emphasis within landscape units of the Arrow Resource Management Zone. The Biodiversity Seral Stage Status Report for the Arrow District (Appendix E) is consistent with these assigned emphases and was used to determine the area of forest types available for proposed harvesting.

3.2.2. Old and Mature Forest and Regional Connectivity

To contribute to the conservation of biodiversity, objectives for the distribution of old and mature-plus-old seral stages are established in the KB-HLP. In proposing new areas for timber harvesting the requirements for maintenance and/or recruitment of area within these seral stages was observed. In units where seral stage was in deficit, proposed blocks were selected only after ensuring that adequate area of the oldest existing age classes would be retained for recruitment to ensure seral targets can be achieved in the shortest time frame, consistent with the KB-HLP objective.

The Arrow Forest District is currently working to establish old growth management areas (OGMAs). Many of the SBFEP operating areas do not have the target area of old growth required by the guidelines and younger stands will be set aside for recruitment. Within this FDP no new development is proposed within candidate areas for potential OGMAs.

The KB-HLP sets an objective of maintaining mature and/or old forests within corridors identified for regional forest ecosystem connectivity. Where options existed, after identifying areas not required for mature-plus-old recruitment, harvest blocks in mature timber types were preferentially located to be outside of regional connectivity corridors.

3.2.3. Coarse Woody Debris

Maintaining coarse woody debris is an important element of managing for biodiversity. The SBFEP will employ strategies such as harvesting practices that retain individual trees or species on site for long term recruitment of coarse woody debris.

The amount of coarse woody debris remaining following harvesting will depend on tree species, age, density, and harvest method and will vary widely from site to site.

The following specific strategies and actions will be undertaken to achieve coarse woody debris objectives:

- maintain natural levels of coarse woody debris to the extent that this is operationally feasible and as constrained by provincial utilization standards;
- maintain coarse woody debris within the naturally occurring range of species, volume and piece sizes for each site;
- focus coarse woody debris retention efforts on larger piece sizes;
- provide for coarse woody debris recruitment through appropriate plans and prescriptions for wildlife trees and riparian management areas;
- prescribe deviation from provincial utilization standards in situations where exceptional biodiversity values require extraordinary measures to ensure that the resources are adequately managed and conserved;
- favour on-site retention of larger individual piece sizes but position, as appropriate, individual pieces and piles to maximize vertical structure and proximity to non-clearcut areas;

- discontinue the practice of yarding, piling, and burning larger non-merchantable pieces;
- integrate coarse woody debris management with riparian and stand level biodiversity management; and
- ensure that all sources of coarse woody debris are not removed in areas where small scale salvage operations occur.

3.2.4. Wildlife Trees

Wildlife tree patches will be established in accordance with site specific recommendations prepared by professional biologists or in accordance with direction provided in the KB-HLP, the KBLUP-IS, and the Biodiversity Guidebook. As a general objective, Table 20(b) of the Biodiversity Guidebook will be used as default target levels in determining area to establish within wildlife tree patches.

Wherever possible the requirement for wildlife trees will be met within riparian and biodiversity reserves. Wildlife tree patches will be retained within or immediately adjacent to cutblocks where requirements have not been met within biodiversity reserves, riparian management zones, or other designated areas. Wildlife trees will be retained as group reserves or scattered trees depending on the particular site conditions and will be retained until other suitable trees can offer equivalent replacement habitat and structural diversity. Wildlife trees and wildlife tree patches will be selected based on their suitable characteristics, incorporated into the block area of silviculture prescriptions once field layout has taken place, and shown on FDP maps, if able to be mapped. These wildlife tree patches will be tracked in the Ministry's Integrated Silviculture Information System (ISIS).

3.2.5. Maximum Cutblock Size, Green-up and Patch Size

An objective of the KBLUP-HLP is to contribute to the conservation of biodiversity through emulation of natural disturbance patterns and to provide for more cost-effective timber harvesting. This FDP is consistent with the requirements for adjacent area green-up height and the conditions to be met for cutblocks larger than those specified for the Nelson Forest Region.

Within this FDP, maximum cutblock size (40 ha.) will only be exceeded where partial cutting – retaining at least 40% of the pre-harvest basal area – is planned or where otherwise identified in the plan to address forest management issues related to forest health or timber at risk, or to achieve objectives related to biodiversity, landscape fragmentation, or habitat management.

With regard to green-up status, harvest blocks will only be proposed adjacent to previously harvested non-greened-up areas where consistent with sound total chance planning and where the combined harvest unit area remains less than the maximum cutblock size, or where required for reasons described above. Green-up status will be determined from a review of the most recent silviculture survey information, contained in opening records, or from field reviews.

Achievement of the temporal and spatial distribution of cut and leave areas (patch size) recommendations of the Biodiversity Guidebook will be a secondary goal of development by the SBFEP, only after achieving other higher level plan and resource management objectives. Where blocks are proposed to achieve patch size objectives, a conceptual design will be prepared to support approval of the proposed block sizes. A conceptual design will include:

- an analysis of patch size distribution for the Landscape Unit within which the cutblock is located, showing consistency with patch size objectives for biodiversity;
- a written statement, specific to the cutblock, that describes planned levels of tree retention, structural attributes to be retained or created, how patches will be deployed spatially within the block, and how this is consistent with the character or elements of a natural disturbance;
- a block map which shows boundary design; and
- as required, maps, sketches, or photos to conceptually demonstrate the design objectives and/or show intended spatial deployment of retained trees and structures."

In all cases where blocks larger than 40 hectares are proposed, for reasons of recovering timber at risk or to achieve patch size objectives, cutblock design and silvicultural prescriptions will incorporate irregular edges and structural characteristics of natural openings, as terrain and stand conditions allow. Some leave elements to emulate natural disturbance will include:

- patches, islands, or "skips" of undisturbed ground cover;
- dead trees;
- scattered individual large diameter trees, especially veteran trees, preferably of lower economic value if possible; and
- large down woody material.

Appendix J (Forest Practices Variances) identifies proposed harvest blocks where the maximum cutblock size will be exceeded or where adjacent areas are not greened-up. A rationale is provided for each of these situations, with the relevant legislative / higher level plan reference.

3.2.6. Fire-Maintained Ecosystems

Objective 8 of the KB-HLP includes the restoration and maintenance of fire-maintained ecosystems in Natural Disturbance Type (NDT) 4.

A small area of NDT-4 exists within the Limpid Creek SBFEP operating area. The SBFEP commits to actively participate in the development of ecosystem restoration plans which may be prepared by the Arrow Forest District and to incorporate management objectives and treatment strategies into future development plans and silviculture prescriptions.

3.3. Water

There are twelve community watersheds and 178 domestic watersheds within the SBFEP operating areas. In addition there are several hundred licenced points of diversion, many of which are incorrectly mapped and require field verification.

The FPC requires that where an FDP covers an area within a community watershed, approval is required from both the District Manager and the Designated Environment Official.

3.3.1. Water Quality Objectives

Proposed development under this FDP will have as one of its primary objectives the protection of water quality, quantity, and timing of flow, considered during both planning and operations on the ground. Within community and domestic consumptive watersheds, which supply drinking and irrigation water to local residents, protection of the water resource is of the highest importance. At this time, specific water quality objectives in accordance with Section 18(1)(x) of the *Operational Planning Regulation* have not been set for community watersheds within the Arrow Forest District.

3.3.2. Watershed Assessments

The community watersheds listed in the table which follows, or portions of them, are within SBFEP operating areas. This table shows the current status of terrain hazard assessments and watershed assessments (Interior Watershed Assessment Procedures or IWAPs) completed or planned for each watershed.

In addition to these studies, watershed assessments have been completed for Shields Creek, Eagle Creek, Winlaw Creek, McCormick Creek, Trozzo Creek and Wren Creek, which are not community watersheds. Mapping and reports from assessments completed to date are available under separate cover.

Development proposed within this FDP is consistent with the results and recommendations of the above watershed assessments.

Within this FDP, four cutblocks (A57435-1, A65404, RR12, & RR13) are proposed within the Blueberry Creek community watershed. The 1999 IWAP for Blueberry Creek anticipated that approximately 300 hectares of harvesting would occur in addition to the harvest areas that were in approved and proposed status at the time of the IWAP. This future harvesting was assumed based on forest health factors (mountain pine beetle) and ECA's were projected assuming harvest removal of the majority of the remaining leading pine stands in the watershed. The IWAP concluded that "this would increase the ECA at the POI to approximately 28% which is considered hydrologically acceptable provided that protective measures are applied to the riparian zones around mainstem channels and that the mass wasting and sediment delivery hazard to creeks is minimized". The four cutblocks proposed are for the purpose of salvaging forest health losses only and are consistent with the protective measures recommended. Therefore, this FDP is consistent with the results and recommendations of the 1999 IWAP for the Blueberry Creek community watershed.

Community Watersheds within SBFEP Operating Areas

Community Watershed	***Terrain Assessments**	***Watershed Assessments**
Baerg / Dog Creek	**TSIL - B 1998**	**WAP 2000**(SFP)
China Creek	**TSIL - D 1995**	No Development Planned
Elgood Creek	No Development Planned	**IWAP 1996** (Atco)
Hanna Creek	No Development Planned	**IWAP 1996** (Atco) **WAP planned for 2001**
Petersen Creek	No Development Planned	No Development Planned
South Murphy Creek	**TSIL - D 1993**	**WAP planned for 2001**
Kuskanax Creek	**TSIL - B 1995** **Surface Erosion Mapping 1996**	**IWAP (level 1)** **WAP 2000**(SFP)
Caribou (Goat Canyon) Creek	**TSIL-C 1996** **Surface Erosion Mapping 1996**	**IWAP (level 1&2)1998**
McFayden Creek	**TSIL-C (SIL-3) 1985** **Surface Erosion Mapping 1985**	No Development Planned
Blueberry Creek	**TSIL-D 1995** **TSIL-C 1996** **Surface Erosion Mapping 1996**	**IWAP (level 1)1996** **IWAP 1999** **Hydrologic assessment of Gem Hill Area - 1998**
Quartz Creek	**TSIL-D 1993**	No Development Planned
Humphries Creek	No Development Planned	No Development Planned

***Completed assessments shown in bold.** / Assessments outstanding shown in regular text.

3.3.3. Measures to Manage and Protect

The results of assessments (IWAP / WAP and terrain hazard assessment, including potential for landslide-induced stream sedimentation & surface soil erosion mapping) will be considered in road and harvest development proposed in the FDP. Important considerations are:

- Level of cut (ECA) - existing and proposed - within drainages or sub-basins and potential impacts on peakflow.
- Block size, location, and orientation, with regard to potential impacts on riparian zones and stream channel stability.
- Harvest systems, road density, road location and design, stream crossings, and road deactivation, in relation to potential sediment delivery.

The KBLUP-HLP includes an objective to reduce impacts of forest development on streams licensed for human consumption by applying additional streamside management provisions to S5 and S6 streams. SBFEP silviculture prescriptions will incorporate, as a minimum, 30 metre management zones on each side of all streams known to be utilized for human consumption. Within the silviculture prescriptions, specific measures will be described to safeguard water.

The SBFEP will continue to follow the guidelines and strategies for community and domestic watersheds identified in the *KBLUP Implementation Strategy* with reference to mapping, riparian management, forest practices (terrain hazard and roads), harvest levels, range management, timber harvesting, silviculture, and recreation management, as well as the additional guidance provided in memoranda by the Ministry of Forests and the Ministry of Environment, Lands and Parks relative to assessments and proposed development activities.

For licenced domestic and community watersheds, watershed boundaries as well as the locations of water licence "points of diversion" (PODs), as derived from MOELP - Water Management Division - maps or as confirmed by field surveys, are shown on the FDP development maps for each SBFEP operating unit.

For all domestic watersheds where development is proposed, an assessment of equivalent clearcut area (ECA) has been completed (Appendix F). Within community and domestic watersheds, calculations of ECA over sensitive terrain has also been completed (Appendix F). In all cases where ECA over sensitive terrain exceeds 20% a “flat over steep” assessment will be conducted.

The SBFEP participates as a committee member on the Blueberry Creek (community watershed) and Edgewood (domestic watershed) watershed technical committees, as well as in a consultative role with the Winlaw Watershed Committee (domestic watershed). Copies of operational plans are provided to committee members and field reviews are conducted of proposed development and active operations.

3.4. Fisheries

3.4.1. Issues

MOELP maintains a database of fisheries inventories. The Arrow SBFEP is adding to this database as electroshock sampling is completed as a component of stream / riparian classification. The following list is streams designated by MOELP as important fish streams that are in or adjacent to SBFEP operating areas.

3.4.2. Measures to Manage and Protect

The Arrow SBFEP is protecting fishery values through ongoing riparian classification and protection of streamside reserves and management areas on a site-specific basis and as required under the FPC. Road crossings on fish bearing streams will utilize appropriate structures to allow fish passage and any in-stream works associated with road construction, modification or deactivation will be conducted within appropriate timing windows in consultation with the MOELP Forest Ecosystem Specialist (FES). Other measures to manage and protect are as outlined in sections concerning water and riparian management.

SIGNIFICANT FISH STREAMS

Within or Adjacent to SBFEP Operating Areas - Arrow Forest District

Stream Name	Tributary to	Drainage	Landscape Unit
Active Creek	Porcupine Creek	Salmo River	**Stagleap**
Asher Creek	Trout Lake	Kootenay River	**Trout**
Barnes Creek	Whatshan River	Upper Arrow Lake	**Barnes-Whatshan**
Beaton Creek	Northeast Arm	Upper Arrow Lake	**Trout**
Big Sheep Cr.	Columbia River	Columbia River	**Big Sheep**
Blueberry Creek	Columbia River	Columbia River	**Blueberry**
Boyd Creek	Incomappleux Creek	Northeast Arm	**Fish**
Burton Creek	Upper Arrow Lake	Columbia River	**Woden**
Caribou Creek	Upper Arrow Lake	Columbia River	**Caribou**
Carpenter Creek	Slocan Lake	Slocan River	**Idaho**
Champion Creek	Columbia River	Columbia River	**Glade**
Columbia River	Pacific Ocean	---	**All AFD LU's**
Erie Creek	Salmo River	Pend d'Oreille R.	**Erie**
Fitzstubbs Creek	Wilson Creek	Slocan Lake	**Wilson**

Fosthall Creek	Upper Arrow Lake	Columbia River	**Fosthall**
Goatcanyon Creek	Caribou Creek	Upper Arrow Lake	**Caribou**
Hedgehog Creek	Sheep Creek	Salmo River	**Stagleap**
Inonoaklin Creek	Lower Arrow Lake	Columbia River	**Eagle**
Incomappleux Creek	Northeast Arm	Upper Arrow Lake	**Fish**
Judkin Creek	Blueberry Creek	Columbia River	**Blueberry**
Kuskanax Creek	Upper Arrow Lake	Columbia River	**Kuskanax**
Ladybird/Norns Creek	Columbia River	Columbia River	**Ladybird**
Lamb Creek	Big Sheep Creek	Columbia River	**Sheep**
Little Sheep Creek	Big Sheep Creek	Columbia River	**Sheep**
Little Slocan River	Slocan River	Kootenay River	**Perry**
MacDonald Creek	Upper Arrow lake	Columbia River	**Caribou**
Murphy Creek	Columbia River	Columbia River	**Blueberry**
Pingston Creek	Upper Arrow Lake	Columbia River	**Fosthall**
Porcupine Creek	Salmo River	Pend d'Oreille R.	**Stagleap**
Salmo River	Pend d'Oreille River	Columbia River	**Erie, Pend d'Oreille, Stagleap**
Sheep Creek	Salmo River	Pend d'Oreille R.	**Stagleap**
Silverton Creek	Slocan Lake	Slocan River	**Idaho**
Slocan River	Kootenay River	Columbia River	**Hills, Koch, Pedro, Perry,**
South Fosthall Creek	Fosthall Creek	Upper Arrow Lake	**Fosthall**
Snow Creek	Burton Creek	Upper Arrow Lake	**Woden**
South Salmo River	Salmo River	Pend d'Oreille	**Stagleap**
Whatshan River	Lower Arrow Lake	Columbia River	**Barnes-Whatshan**
Wilson Creek	Slocan Lake	Slocan River	**Wilson**
Winlaw Creek	Slocan River	Kootenay River	**Pedro**

3.5. Riparian Management

3.5.1. Issues

Riparian management is of particular importance because of the large number of consumptive watersheds and fish streams within SBFEP operating areas. In addition, riparian areas are often the areas of highest biodiversity, best timber growing sites, and may have high utilization by many wildlife species.

3.5.2. General Objectives

Riparian areas along the shores of lakes and wetlands or along the banks of streams will be protected through the use of appropriate reserve and management zones. In assessing riparian area for the purpose of determining management and reserve zones, the actual zone of riparian influence as determined in the field will be considered, with distances defined under the FPC and regulations considered as a minimum.

The objective of the riparian management zone is to protect the integrity of the reserve zone where one is required, and to maintain water quality and important wildlife values where no reserve zone is required. The amount of basal area retention within management zones will depend on the characteristics and sensitivity of the stream, the characteristics of the surrounding area, and other factors such as wind throw hazard. Retention levels will range from protection of understory vegetation only with no basal area retention along some S6 streams to complete retention of all trees classes and vegetation on very sensitive or high value streams. In most cases, dominant and/or co-dominant trees will be removed to promote wind firmness.

3.5.3. Measures to Manage and Protect

The Arrow SBFEP has completed riparian classification projects annually since 1994. Some streams and lakes within SBFEP operating areas have been classified based on sampling by other agencies (e.g. MOELP). Summary tables of all stream, lake, and wet area classifications to date are contained in Appendix D of this plan. Development maps (resources overlays) show riparian classifications. By default, all lakes within the Arrow Forest District are considered to be 'L1' classification.

Silviculture prescriptions will incorporate field classification and management strategies for riparian areas in accordance with the Riparian Management Area Guidebook, the Fish-stream Identification Guidebook and FPC regulations. Wherever practicable, the *best management practices for management zones* outlined within the Riparian Management Area Guidebook will be followed.

The SBFEP will conduct road construction and harvesting activities within or adjacent to riparian areas with consideration for protection of riparian values and employing appropriate mitigation measures.

3.6. Wildlife

3.6.1. Caribou Habitat

The KB-HLP identifies caribou habitat areas within the Arrow Resource Management Zone which cover portions of the Trout Lake, Payne Creek, Kuskanax, Ymir, Sheep Creek, and Stagleap SBFEP operating areas. Within the caribou habitat areas, the KB-HLP sets requirements for forest practices and maintenance of forest cover by biogeoclimatic zone.

Landscape level planning and analysis has been initiated in the Stagleap, Trout and Halfway Landscape Units with emphasis on achieving requirements for caribou habitat, old and mature forest, and other biodiversity objectives while identifying timber harvesting opportunities. Completion of these plans is anticipated within the effective period of this FDP. Proposed development will be based on these plans and will include strategies for access management as a key component.

Within this FDP, no new harvest blocks are proposed within designated caribou habitat areas.

3.6.2. Grizzly Bear Habitat

The KB-HLP includes an objective to maintain mature and/or old forests adjacent to avalanche tracks important for grizzly bear habitat.

Important habitat will be determined from government mapping and/or SBFEP operational planning. During field reconnaissance and development planning, special attention will be given to areas adjacent to avalanche tracks to identify potentially important habitat. Where it occurs, strategies will be followed to protect habitat including establishment of reserves, retaining forested strips within avalanche complexes, avoiding road crossings where possible and minimizing right-of-way widths, avoiding disturbance during active bear use, and managing access. In all cases where the potential exists for development plans to affect grizzly bear habitat, a qualified biologist will be consulted to determine appropriate strategies.

Within the current FDP, no new harvest blocks have been proposed near known important feeding or denning sites or adjacent to avalanche tracks important for grizzly bear habitat.

3.6.3. Objectives for Known Ungulate Winter Range

Many lower slopes within SBFEP operating areas are classified as Ungulate Winter Range. During the early winter season deer congregate in stands which contain a mix of dense coniferous cover and open areas that can provide browse. Winter logging is a desirable practice in early winter range as many studies have shown that deer will actively utilize areas being logged in order to browse the green branches and lichen that become available. Partial cutting and selective logging are not recommended within early and mid winter ranges as these systems open the canopy and result in poor snow interception.

As winter progresses snow interception becomes more important and deer will move downward in elevation and congregate in areas of heavy forest cover close to food supplies. The minimum age of forest that can provide this cover is in the 40 to 80 year age range. Calculations of available winter range are done using stands of greater than 100 years old to ensure that the required attributes are present. Long narrow cutblocks are best able to provide the necessary mix of forest cover and food availability. Late winter range areas lose snow rapidly in spring due to insolation. They are generally areas of south-facing, moderately steep slopes with patchy forest cover. Within these areas harvesting will focus on retention of patches or veteran trees.

Prescriptions for blocks within ungulate winter range will be developed on a site-specific basis with consideration given to all relevant resource concerns and the existing level of harvest in the area. In general, blocks in winter range will maximize the amount of edge relative to the block size. Within the ICHmw2 biogeoclimatic subzone partial cutting silviculture prescriptions will be avoided and winter harvesting will be encouraged in early winter range. Within the ICHdw emphasis will be on retention of the largest Douglas-fir. Management will aim for the optimal amount, quality, and distribution of security and snow interception cover and forage opportunities. These habitat management objectives will vary according to the target species, local climate, and residual habitat conditions.

Known ungulate winter range is identified on the FDP maps and blocks within ungulate winter range are identified in the Harvest Summary Table (Appendix A). Calculations showing the amount of available winter range around each proposed block are included as Appendix H.

3.6.4. Known Species at Risk

Known species at risk within SBFEP operating areas are Mountain Goats and Goshawks. Goshawk nest sites have been confirmed in a number of operating areas. In addition, site-specific prescriptions for protection of Goshawk nest sites have been completed and a study of all known nests within SBFEP operating areas, with recommendations for best management practices, has been undertaken. This study will lead to a better understanding of Goshawk requirements and best management practices around nesting sites.

3.6.4.1.MEASURES TO MANAGE AND PROTECT

The FDP resource overlay maps identify wildlife habitat areas (WHAs), ungulate winter ranges, wildlife tree patches, connectivity corridors, caribou habitat areas, fish stream / riparian classification and other designations important for wildlife habitat management or protection.

Within SBFEP operating units, identified fish & wildlife resource values will be protected, and/or enhanced through landscape level and operational planning as well as through strategies outlined below.

The Hamling Lakes Wildlife Management Area extends over a portion of the SBFEP operating area at Kuskunax Creek. Guidelines within the *The Hamling Lakes Wildlife Management Area Draft Management Guide, March 1996,* will be followed in development planning within this area.

In general, development plans will be referred to the MELP FES. Field reviews will be undertaken of areas where important wildlife habitat issues or potential conflicts are identified.

Where known habitat values exist, where sensitive, threatened or endangered species are encountered, or as requested by the FES, wildlife habitat assessments will be carried out by experienced, qualified biologists to identify options or strategies to integrate and protect wildlife resources.

Wildlife objectives will also be accommodated through harvest planning, access management, and design of developments. Road density and connecting road systems will be minimized. Where suitable, harvest sequence may be compressed with road systems closed or deactivated promptly following harvesting and silviculture operations.

Within areas of importance for caribou or grizzly bear, development planning and stand level prescriptions will be guided by the *Memorandum of Understanding between the Ministry of Forests and Ministry of Environment, Lands and Parks regarding Instruction for the preparation of the 1998 Forest Development Plans* (MOU).

3.7. Recreation

3.7.1. Issues

Many SBFEP operating areas have high recreational use. There are recreation sites established in several operating areas and proposed sites in others. Local groups such as the Paulson and Blackjack ski clubs, Friends of Parks and Trails, and the Castlegar and District Heritage Society have been consulted for input into current development.

3.7.2. Measures to Manage and Protect

The Arrow SBFEP is committed to the integration of recreational opportunities and management for landscape visual quality objectives in operational planning. Locations of the following known recreation features are identified on the resources overlay for each development map included in this FDP:

- recreation reserves;
- recreation sites (campsites, cabins, etc.);
- recreation and heritage trails;
- interpretative forest sites; and
- ski hills, cross country ski trails & back country ski areas.

Recreation inventory polygons are shown on the development maps for SBFEP areas.

Strategies for the protection of known recreational features will be described within Operating Unit plans (e.g. LRUPs, watershed plans) and will be incorporated into silviculture prescriptions.

The Paulson/Mud Lake operating area will continue to be managed with recreation as the primary resource consideration. A new Total Resource Plan is currently being developed which will be followed by the preparation of silviculture prescriptions covering the entire (1170 ha.) operating unit. Harvesting will be integrated to continue salvage and control of mountain pine beetle in infested stands in this area. Areas of new attack and susceptible stands will be accessed and harvested in a manner which provides opportunities for expansion of the ski trail network and maintains the recreational experience of the area. Strategies will include the use of narrow rights-of-way, access roads with rolling grades, and use of selective or patch cutting silviculture systems.

3.8. Visual Landscape Management

The KBLUP-HLP identifies "known scenic areas" as defined in the OPR. Until visual quality objectives (VQOs) are established over known scenic areas within the Arrow RMZ, the SBFEP will manage for visual resources based on the existing interim recommended VQOs, as well as guidance provided within the KBLUP-IS and the document entitled *Strategies for the Kootenay Boundary Higher Level Plan Order*.

Known Scenic Areas, Landscape Sensitivity Ratings and recommended Visual Quality Objectives are delineated on the FDP development maps.

The Arrow SBFEP is committed to visual landscape management. A Visual Impact Assessment (VIA) following the procedure outlined within the Visual Impact Assessment Guidebook will be completed for all areas which may be visually sensitive and which are proposed for harvesting or road construction.

Where appropriate, a more in-depth process involving detailed landscape inventory, character analysis, and visual design will be undertaken to guide planned harvest pattern and timing and to ensure integration of non-timber resource values. This work has been completed in a number of areas. Over the effective period of this plan, visual landscape design will be completed for the Burton face (Caribou Creek) and Edgewood face areas.

The primary objective is to retain a high standard of visual integrity while managing for all resources. Enhanced block design will incorporate Landscape Character Analysis as a guiding principle for harvesting of timber. Block design utilizes visual force analysis to fit the landform. Various silvicultural systems will be used in order to create a diverse visual landscape that will suit the topography and character of the area. Some existing harvested units may be rehabilitated to fit the landforms and reduce visual impacts.

3.8.1. Strategies for Visual Landscape Resource Management

Any harvesting of timber in a visually sensitive area will require appropriate design of harvesting units to reflect the nature of shapes found in the landscape. Alterations will be subordinate to the character of the landscape. Repetition of line, form and texture is important to ensure blending with dominant elements.

In planning forest development, the following general recommendations for visually sensitive areas will be followed:

- Visual Impact Assessments (VIA's) will be completed for all proposed harvest units within known scenic areas, or if indicated from the recommended VQO.
- The Forest Development Plan will allow for public comment prior to harvesting.
- Harvesting activities should be designed so that visual impacts will be absorbed over a period of time with adequate spatial distribution.
- The shape of harvesting units should reflect the quality of natural shapes found in the landscape. Units should therefore be irregular in shape and interlock with the existing forest.
- Where natural openings exist, they will guide the size and shape of visible portions of clearcuts.
- Cable logging skid routes should be oriented away from other important viewpoints where operationally feasible.
- Landings and skid trails should be minimized in visually sensitive areas.
- Within operational constraints, roads should be built with as narrow a right-of-way width as possible.

3.9. Botanical Forest Products

3.9.1. Issues

The full extent of harvesting of botanical forest products within SBFEP operating areas is not known. It is known, however, that mushroom picking - Chantrell, Pine, and other species - does occur on a large scale. Collection of cedar boughs for cedar oil, and cutting of white pine boughs and false box for florists, as well as the harvesting of other plant species for wildcrafting has also occurred on a smaller scale.

3.9.2. Measures to Manage and Protect

The potential economic values from harvesting of botanical forest products from SBFEP operating areas is recognized, particularly the commercial harvesting of pine mushrooms (*Trichloma magnivelare*). In order to address the management of this resource the Arrow SBFEP is continuing with a multi-year study of Pine mushroom habitat and productivity in the Fostall and Galena Bay areas.

The first objective of this study is to identify and map the productivity of Pine Mushroom habitats within these operating areas through assessments and stratification according to existing productivity.

A number of small harvesting units are proposed utilizing different silviculture systems (partial cut and clear-cut) and harvesting methods (e.g. skidder, cable, horse). Strategies will be used to reduce forest floor disturbance and protect the mushroom habitat.

The second objective of the study is to assess mushroom productivity following timber harvesting. This information will be used to determine the impacts of the various logging methods used and to develop recommendations that can be applied in these and other areas with important pine mushroom habitat.

3.10. Range

3.10.1. Issues

The boundaries of SBFEP operating areas overlap portions of several range units within the Arrow District as shown in the table below:

Range Unit	SBFEP Operating Area
Barnes Creek - Green Mountain	Snowshoe Lake
Ingersol	Oatscott & Whatshan Lake
Snowshoe Lake	Snowshoe Lake
9 Mile	Limpid Cr. / Pend D'Oreille
South Salmo	Limpid/ Wallack Cr./ Pend D'Oreille

Within these areas, issues include spread of noxious weeds (especially knapweed), conflicts between cattle and wildlife, protection of riparian areas, and potential damage to forest plantations.

3.10.2. Measures to Manage and Protect

Range units are recognized as having high values for the grazing of domestic cattle and wildlife. These needs will be integrated into operational plans based on referrals and comments from the Arrow District Range Officer, MOELP Fish and Wildlife Branch, ranchers, and other resource users. In addition, areas with potential for new range use will be identified as a component of development planning.

Range developments, forage production, and livestock management are not expected to affect, or be significantly affected by, timber management activities.

The average carrying capacity is estimated at six hectares per animal unit month (AUM) in areas that have not been harvested. Two years after harvest the carrying capacity is estimated to increase to three hectares per AUM.

The estimated season of use will vary annually and by location but will be approximately from June 1st to September 30th. The actual turn out date will be determined by range readiness. Within disturbed areas grass species must achieve a height of 12 cm, fireweed 15 cm, and aspen 3/4 leaf, and the soil must be firm enough to resist hoof compaction and shearing before the turnout of livestock.

Utilization of grass species by livestock will be limited to 50% of annual production. Forbs will be managed to maintain a healthy, vigorous cover, to prevent the establishment of noxious weeds and to protect wildlife browse.

Cattle will not be allowed to congregate in riparian areas or wetlands. If livestock are found to be congregating in these areas measures to move the cattle will immediately be taken by the tenure holder.

The salting program must be directed towards timbered, brushy or non-productive portions of the area. Salt must be kept a minimum of 400 metres away from riparian areas, wetlands, and recently harvested areas. Salt must be kept away from meadows and plantations to encourage livestock use of less preferred areas. Salt must be placed well away from previous year's salt ground and must be moved during the grazing season as required to improve livestock distribution.

Structures must be maintained in good condition. Proposed structures, improvements, or deactivation must be in accordance with a Range Use Plan for this area and be approved by the Arrow Forest District Range Officer

Wildlife habitat and browse will be protected by restricting the use of riparian areas by cattle and limiting the utilization of grass species and forbs to fifty percent of annual production.

Infestations of knapweed are present through out all operating areas. The use of biological agents, chemical application, and prompt grass seeding of road rights-of ways and disturbed areas will address noxious weeds as per the Nelson Forest Region Five Year Noxious Weed Management Plan

Road right-of ways and ditch lines will be seeded with an erosion control mix. Erosion control mix will be applied as soon as possible after soil exposure.

Rehabilitated areas within cutblocks including skid roads, bladed trails, and landings will be managed on a site-specific basis in accordance with an approved prescription. In most cases this will include seeding with a range mix which will be applied as soon as possible after soil exposure.

Every effort shall be made to minimize grazing use on areas recently harvested or recently planted. If livestock are found to be causing damage to regeneration corrective measures will be taken immediately by the tenure holder.

3.11. Cultural Heritage Resources and Archaeological Sites

3.11.1. Issues

Cultural heritage resources are objects, sites, or locations of traditional aboriginal societal practices that are of historic, cultural, or archaeological significance to the province, a community, or an aboriginal people. Cultural heritage resources include aboriginal rights and archaeological sites. Several First Nations groups have expressed interests in various SBFEP operating areas.

3.11.2. Measures to Manage and Protect

Archaeological and cultural heritage resource assessments will be undertaken in accordance with legislation and policy respecting management of such resources. An Archaeological Overview Assessment (AOA) has been completed for the Arrow Forest District. The SBFEP will undertake Archaeological Impact Assessments (AIA) in accordance with the requirements of the *Heritage Conservation Act, Environmental Assessment Act* and the *Forest Practices Code of British Columbia Act*. Areas classified as "low" archaeological potential within the AOA do not require an AIA while those classified as "high" or "moderate" will have a detailed AIA completed. Appropriate impact management measures will be applied as required. The location of known archaeological sites will not be disclosed.

3.11.3. Aboriginal Rights

The following First Nations have been contacted to solicit input and to propose meetings to review areas of interest covered by this FDP:

Tribal Councils

• Ktunaxa/Kinbasket Tribal Council,	Cranbrook, B.C.
• Okanagan Nation Alliance,	Westbank, B.C
• Shuswap Nation Tribal Council,	Kamloops, B.C.

Band Councils:

• Lower Similkameen Indian Band,	Keremeos, B.C.
• Okanagan Indian Band,	Vernon, B.C
• Osoyoos Indian Band,	Oliver, B.C.
• Penticton Indian Band,	Penticton, B.C.
• Upper Similkameen Indian Band,	Keremeos, B.C

- Westbank First Nation, Kelowna, B.C.

Independent Groups:

- Spallumcheen Indian Band, Enderby, B.C.

Concerns expressed by First Nations groups, as well as actions to address these, will be included within this plan. Mapping or public disclosure of sites of importance to First Nations will occur only with agreement of that group.

3.12. Protected Areas & Wilderness

3.12.1. Issues

The SBFEP FDP includes operating areas within special management zones adjacent to the Gladstone and Upper Granby protected areas as well as the White Grizzly Wilderness Area.

3.12.2. Measures to Manage and Protect

No activities are anticipated adjacent to the above protected areas within the effective period of this plan.

3.13. Terrain Stability

3.13.1. Issues

The Arrow SBFEP has completed overview terrain hazard mapping, at Terrain Survey Intensity Level D (TSIL-D), within 38 of its 40 operating areas. In addition, Blueberry Creek, Perry Ridge, Caribou (Goat Canyon) Creek, Silverton, Edgewood, and portions of Winlaw and Trozzo Creeks have had Terrain Stability Mapping at TSIL-C level. Within the Kuskanax, Beaton, Payne, and South Fife areas mapping has been completed to level B. All terrain stability assessments have extended beyond the upper operability line of the area being assessed. Channel Assessments have been completed for streams at Perry Ridge, the north side of Robson Ridge, and Caribou Creek.

Portions of a number of community watersheds (see Community & Domestic Watersheds section) are within SBFEP operating units and will have TSIL B or C assessments, including surface soil erosion potential mapping, completed prior to harvesting or road construction:

3.13.2. Measures to Manage and Protect

Areas of unstable and potentially unstable terrain identified as a result of terrain hazard classification and mapping are shown on the Forest Cover base map of the development maps within this FDP.

Terrain Survey Field Assessments (TSFA) will be conducted within any of the following areas proposed for road or harvest block development:

- slopes greater than 50%, not covered by TSIL B or C mapping;
- areas defined as unstable or potentially unstable from overview mapping;
- areas with indicators of slope instability;
- areas with a class V rating from a TSIL B or C survey; and
- areas with class IV rating from TSIL B or C survey, proposed for road construction or ground-based harvest systems.

In addition, field assessments will be completed for all areas which have harvesting or road building activities proposed upslope of, and draining onto, unstable or potentially unstable terrain (Class IV, V, P or U polygons). In all cases where ECA over sensitive terrain exceeds 20% a "flat over steep" assessment will be conducted.

Professional prescriptions to address terrain stability concerns, including prescriptions for road deactivation and mitigation measures, will be developed and implemented where required.

Development planning will also consider the potential for creating new snow avalanche initiation zones in clearcuts when one or more of the following conditions apply:

- proposed cutblock is adjacent to Ea areas;
- area is subject to wind deposition of snow;
- terrain contains slopes greater than 60%;
- proposed cut block is situated in the headwall area of a gully;
- proposed cutblock is located in the ESSF biogeoclimatic zone;
- forest cover indicates past avalanche activity; or
- based on local knowledge.

The following blocks within this FDP will have snow avalanche assessments completed: A60215 & A60217 (NE Arm), A59994 (Winlaw), RR13 (Robson Ridge), EA2 (East Arrow Park), and BR8 & BR9 (Snow Creek).

3.13.3. Consistency with Required Assessments

The following blocks are consistent with the results and recommendations of assessments required under sections 16 & 17 of the OPR and comply with sections 7(2), 7(3)(a), 8(2)(a), 8(3) & 8(4) of the THPR as required under section 20(3) of the OPR.

TSL	A57435-1	A57435-2	A57328	A60212	A60214	A60215	A60216
Composite Map Name	College	College	Whatshan North	Beaton	Beaton	Beaton	Beaton
Map Reference	82F022	82F022	82L010	82K071	82K071	82K071	82K071
Geographic Location	College Cr.	College Cr.	E. Whatshan	NE Arm	NE Arm	NE Arm	NE Arm
Current Category Status	Proposed	Information	Approved	Approved	Approved	Approved	Approved
Change From Last Plan?	Yes	No	No	No	No	No	No
Joint Approval Required?	Yes	Yes	No	No	No	No	No

TSL	A60217	A57435-2	A59989	A60118	A59991	A59992	A59993
Composite Map Name	Beaton	College	Robson Ridge	Whatshan South	Winlaw	Winlaw	Winlaw
Map Reference	82K071	82F022	82F031	82E 100	82F063	82F063	82F063
Geographic Location	NE Arm	College Cr	North Ridge	Christie Cr.	Trozzo Cr.	Trozzo Cr.	Trozzo Cr.
Current Category Status	Approved	Approved	Approved	Approved	Approved	Approved	Approved
Change From Last Plan?	No	No	No	No	No	No	No
Joint Approval Required?	No	Yes	No	No	No	No	No

TSL	A59994	A59995	A59996-13	A59996-6	A59996-7	A59997	A59998
Composite Map Name	Winlaw	Winlaw	Winlaw	Winlaw	Winlaw	Winlaw	Winlaw
Map Reference	82F063	82F063	82F063	82F063	82F063	82F063	82F063
Geographic Location	Trozzo Cr.	Trozzo Cr.	Trozzo Cr.	Trozzo Cr.	Trozzo Cr.	Trozzo Cr.	Trozzo Cr.
Current Category Status	Approved	Approved	Approved	Approved	Approved	Approved	Approved
Change From Last Plan?	No	No	No	No	No	No	No
Joint Approval Required?	No	No	No	No	No	No	No

TSL	A59999	A60000	A60001	A60032-1	A60032-2	A62996	A62997
Composite Map Name	Winlaw	Winlaw	Winlaw	Ymir	Ymir	Hills	Hills
Map Reference	82F063	82F063	82F063	82F035	82F035	82K012	82K012
Geographic Location	Trozzo Cr.	Trozzo Cr.	Trozzo Cr.	Wren Cr.	Wren Cr.	Summit Lake	Summit Lake
Current Category Status	Approved	Approved	Approved	Approved	Approved	Approved	Approved
Change From Last Plan?	No	No	No	No	No	Yes	Yes
Joint Approval Required?	No	No	No	No	No	No	No

TSL	A62994-1	A62994-2	A65389	A65390	A38285-1	A62686	A62687
Composite Map Name	Beaton	Beaton	Burton	Burton	Beaton	Big Sheep	Big Sheep
Map Reference	82K072	82K072	82F092	82F092	82K072	82E010	82E010
Geographic Location	Beaton	Beaton	Goat Canyon	Goat Canyon	N.E. Arm	Santa Rosa	Santa Rosa
Current Category Status	Approved	Approved	Approved	Approved	Information	Approved	Approved
Change From Last Plan?	Yes	Yes	No	No	No	No	No
Joint Approval Required?	No	No	Yes	Yes	No	No	No

The following blocks are consistent with the results and recommendations of assessments required under sections 16 & 17 of the OPR and comply with sections 7(2), 7(3)(a), 8(2)(a), 8(3) & 8(4) of the THPR as required under section 20(3) of the OPR.

TSL	A62688	A62689-1	A62689-2	A62692-1	A62692-2	BS1	BS11
Composite Map Name	Big Sheep	Big Sheep	Big Sheep	Big Sheep	Big Sheep	Big Sheep	Big Sheep
Geographic Location	Santa Rosa	Santa Rosa	Santa Rosa	Santa Rosa	Santa Rosa	Record Ridge	Swehaw Creek
Current Category Status	Approved	Approved	Approved	Approved	Approved	Proposed	Proposed
Change From Last Plan?	No	No	No	No	No	Yes	Yes
Joint Approval Required?	No	No	No	No	No	No	No

TSL	BS3	BS4	BS5	BS6	BS7	BS8	A62447
Composite Map Name	Big Sheep	Big Sheep	Big Sheep	Big Sheep	Big Sheep	Big Sheep	Bulldog
Map Reference	82E010	82F001	82E010	82E010	82E010	82E010	82E040
Geographic Location	Bonanza Road	Esling Creek	Swehaw Creek	Swehaw Creek	Swehaw Creek	Swehaw Creek	Bulldog
Current Category Status	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed	Approved
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	No
Joint Approval Required?	No	No	No	No	No	No	No

TSL	A62448	A62449	A62450	A62451	A62452	A62453	A62454
Composite Map Name	Bulldog	Bulldog	Bulldog	Bulldog	Bulldog	Bulldog	Bulldog
Map Reference	82E040	82E040	82E040	82E040	82E040	82E040	82E040
Geographic Location	Bulldog	Bulldog	Bulldog	Bulldog	Bulldog	Bulldog	Bulldog
Current Category Status	Approved	Approved	Approved	Approved	Approved	Approved	Approved
Change From Last Plan?	No	No	No	No	No	No	No
Joint Approval Required?	No	No	No	No	No	No	No

TSL	A62455	A62456	A65367	A65402-1	A65402-2	BU2	BU3
Composite Map Name	Bulldog	Bulldog	Bulldog	Bulldog	Bulldog	Bulldog	Bulldog
Map Reference	82E040	82E040	82E030	82E040	82E040	82E040	82E040
Geographic Location	Bulldog	Bulldog	Farron	Peter Creek	Peter Creek	Grass Cr	Porcupine Cr
Current Category Status	Approved	Approved	Proposed	Information	Proposed	Proposed	Proposed
Change From Last Plan?	No	No	Yes	Yes	Yes	Yes	Yes
Joint Approval Required?	No	No	No	No	No	No	No

TSL	BS2	BU7	BR1	BR10	BR11	BR2	BR3
Composite Map Name	Big Sheep	Bulldog	Burton	Burton	Burton	Burton	Burton
Map Reference	82E010	82E040	82F091	82F092	82F091	82F091	82F091
Geographic Location	Santa Rosa	Porcupine Cr	Burton Face	Snow Cr.	Burton Creek	Burton face	Burton Rd.
Current Category Status	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Joint Approval Required?	No	No	Yes	No	No	No	No

The following blocks are consistent with the results and recommendations of assessments required under sections 16 & 17 of the OPR and comply with sections 7(2), 7(3)(a), 8(2)(a), 8(3) & 8(4) of the THPR as required under section 20(3) of the OPR.

TSL	BR5	BR6	BR8	BR9	EA2	EC1	EC10
Composite Map Name	Burton	Burton	Burton	Burton	E. Arrow Park	Eagle Cr	Eagle Cr
Map Reference	82F091	82F091	82F092	82F092	82K012	82E089	82E079
Geographic Location	Hail Cr	Goat Canyon	Snow Cr.	Snow Cr.	Dog Cr.	Edgewood Face	Worthington
Current Category Status	Information	Information	Proposed	Proposed	Proposed	Information	Information
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Joint Approval Required?	No	Yes	No	No	No	No	No

TSL	EC11	EC12	EC13	EC14	EC15	EC2	EC3
Composite Map Name	Eagle Cr	Eagle Cr	Eagle Cr	Eagle Cr	Eagle Cr	Eagle Cr	Eagle Cr
Map Reference	82E080	82E080	82E080	82E079	82E079	82E090	82E090
Geographic Location	Worthington	Worthington	Worthington	Worthington	Mt. Young	Edgewood Face	Edgewood Face
Current Category Status	Proposed	Proposed	Proposed	Information	Information	Information	Information
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Joint Approval Required?	No	No	No	No	No	No	No

TSL	EC4	EC5	EC6	EC7	EC8	EC9	A60070
Composite Map Name	Eagle Cr	Eagle Cr	Eagle Cr	Eagle Cr	Eagle Cr	Eagle Cr	Fosthall
Map Reference	82E080	82E079	82E079	82E079	82E079	82E079	82K031
Geographic Location	Edgewood Face	Worthington	Worthington	Worthington	Johnson	Johnson	Fosthall
Current Category Status	Information	Proposed	Proposed	Information	Proposed	Proposed	Approved
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	No
Joint Approval Required?	No	No	No	No	No	No	No

TSL	A60070-2	A60071	A60072-1	A60072-2	A60074	A53933-1	A53933-2
Composite Map Name	Fosthall	Fosthall	Fosthall	Fosthall	Fosthall	Grassey	Grassey
Map Reference	82K031	82K031	82K031	82K031	82K031	82F023	82F023
Geographic Location	Fosthall	Fosthall	Fosthall	Fosthall	Fosthall	Grassy Creek	Grassy Creek
Current Category Status	Approved	Approved	Approved	Approved	Approved	Approved	Approved
Change From Last Plan?	No	No	No	No	No	Yes	No
Joint Approval Required?	No	No	No	No	No	No	No

TSL	GR10	GR11	GR3	GR7	GR8	GR9	HI1
Composite Map Name	Grassey	Grassey	Grassey	Grassey	Grassey	Grassey	Hills
Map Reference	82F023	82F033	82F022	82F023	82F023	82F023	82K013
Geographic Location	Grassey Creek	McFee Cr	Cai Creek	Grassey Creek	Grassey Creek	Grassey Creek	Hills
Current Category Status	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Joint Approval Required?	No	No	No	No	No	No	No

The following blocks are consistent with the results and recommendations of assessments required under sections 16 & 17 of the OPR and comply with sections 7(2), 7(3)(a), 8(2)(a), 8(3) & 8(4) of the THPR as required under section 20(3) of the OPR.

TSL	HI2	HI4	KU4	A52307	A65401	A65192	RR11
Composite Map Name	Hills	Hills	Kuskanax	Limpid	Limpid	Robson Ridge	Robson Ridge
Map Reference	82K013	82K013	82K022	82F004	82F003	82F031	82F031
Geographic Location	Hills	Hills	Friedenburger	Limpid Creek	Limpid Cr	McCormick Cr	Moberly Cr
Current Category Status	Information	Proposed	Information	Approved	Proposed	Proposed	Proposed
Change From Last Plan?	Yes	Yes	Yes	No	Yes	Yes	Yes
Joint Approval Required?	No	No	No	No	No	No	No

TSL	RR4	RR5	A65403	RO1	RO2	RO3	A56811-3
Composite Map Name	Robson Ridge	Robson Ridge	Rossland	Rossland	Rossland	Rossland	Silverton
Map Reference	82F031	82F031	82F011	82F011	82F011	82F011	82F094
Geographic Location	Robson Ridge	McCormick Cr	Murphy Cr	S.Murphy Cr.	Hanna Cr.	Black Jack	Silverton
Current Category Status	Proposed	Proposed	Proposed	Information	Information	Information	Approved
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	No
Joint Approval Required?	No	No	No	Yes	Yes	Yes	No

TSL	A67092-1	A67092-2	SP1	SP2	SP3	SP4	A38208
Composite Map Name	Silverton	Silverton	Slocan Park	Slocan Park	Slocan Park	Slocan Park	Stewart
Map Reference	82F094	82F094	82F043	82F043	82F043	82F043	82F024
Geographic Location	Silverton	Silverton	Radcliffe Cr	Radcliffe Cr	Radcliffe Cr	Radcliffe Cr	Stewart Creek
Current Category Status	Approved	Approved	Proposed	Proposed	Proposed	Proposed	Approved
Change From Last Plan?	No	No	Yes	Yes	Yes	Yes	No
Joint Approval Required?	No	No	No	No	No	No	No

TSL	BLK 1	Blk C	ST1	ST4	ST6	ST7	XI
Composite Map Name	Stewart	Stewart	Stewart	Stewart	Stewart	Stewart	Stewart
Map Reference	82F024	82F024	82F034	82F014	82F024	82F034	82F024
Geographic Location	Hidden Cr.	Hidden Cr	Stewart	Erie	Hidden	Elise Cr.	Hidden Cr.
Current Category Status	Approved	Approved	Proposed	Proposed	Proposed	Proposed	Approved
Change From Last Plan?	No	No	Yes	Yes	Yes	Yes	No
Joint Approval Required?	No	No	No	No	No	No	No

TSL	A57483	NW1	NW10	NW11	NW12	NW2	NW3
Composite Map Name	Whatshan North	Whatshan North	Whatshan North	Whatshan North	Whatshan North	Whatshan North	Whatshan North
Map Reference	82L010/020	82L010	82L010	82L010	82L010	82L010	82L010
Geographic Location	N. Whatshan	W. Whatshan	W. Whatshan	W. Whatshan	W. Whatshan	W. Whatshan	W. Whatshan
Current Category Status	Approved	Proposed	Proposed	Information	Proposed	Proposed	Proposed
Change From Last Plan?	No	Yes	Yes	Yes	Yes	Yes	Yes
Joint Approval Required?	No	No	No	No	No	No	No

The following blocks are consistent with the results and recommendations of assessments required under sections 16 & 17 of the OPR and comply with sections 7(2), 7(3)(a), 8(2)(a), 8(3) & 8(4) of the THPR as required under section 20(3) of the OPR.

TSL	NW5	NW7	NW8	NW9	SW1	SW10	SW11
Composite Map Name	Whatshan North	Whatshan North	Whatshan North	Whatshan North	Whatshan South	Whatshan South	Whatshan South
Map Reference	82L010	82L020	82L020	82L010	82E090	82E100	82E100
Geographic Location	W. Whatshan	W. Whatshan	W. Whatshan	W. Whatshan	Snowshoe Lake	East Barnes	SW Whatshan Lk
Current Category Status	Proposed	Proposed	Information	Proposed	Proposed	Proposed	Proposed
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Joint Approval Required?	No	No	No	No	No	No	No

TSL	SW12	SW2	SW3	SW4	SW5	SW6	SW7
Composite Map Name	Whatshan South	Whatshan South	Whatshan South	Whatshan South	Whatshan South	Whatshan South	Whatshan South
Map Reference	82E090	82E099	82E100	82E100	82E100	82E090	82E100
Geographic Location	Needles	Snowshoe Lake	Snowshoe Lake	Snowshoe Lake	Snowshoe Lake	Needles	Christie Cr.
Current Category Status	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Joint Approval Required?	No	No	No	No	No	No	No

TSL	SW8	SW9	WR1	WR2	A60030	A60031	
Composite Map Name	Whatshan South	Whatshan South	Wragge Cr	Wragge Cr	Ymir	Ymir	
Map Reference	82E100	82E100	82k003	82k003	82F035	82F035	
Geographic Location	Christie Cr.	East Barnes	Wragge Cr	Wragge Cr	Wren Cr.	Wren Cr.	
Current Category Status	Proposed	Proposed	Information	Proposed	Approved	Approved	
Change From Last Plan?	Yes	Yes	Yes	Yes	No	No	
Joint Approval Required?	No	No	No	No	No	No	

TSL	A65404
Composite Map Name	College
Map Reference	82F022
Geographic Location	College Creek
Current Category Status	Proposed
Change From Last Plan?	Yes
Joint Approval Required?	Yes

The following blocks require assessments under sections 16 & 17 of the OPR, and will require an FDP amendment prior to issuance of a TSL, as required under section 20(3) of the OPR.

TSL	BU1	BR4	BR7	YM8	YM9	HI3	A65400
Composite Map Name	Bulldog	Burton	Burton	Ymir	Ymir	Hills	Limpid
Map Reference	82E040	82F091	82F092	82F025	82F025	82K013	82F003
Geographic Location	Pup Cr	Ice creek	Snow Cr.	Hidden Cr	Hidden Cr	Hills	Tillicum Cr
Current Category Status	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Joint Approval Required?	No	No	No	No	No	No	No

TSL	RR12	RR13	ST2	ST3	NW4	NW6	WR3
Composite Map Name	Robson Ridge	Robson Ridge	Stewart	Stewart	Whatshan North	Whatshan North	Wragge Cr
Map Reference	82F031	82F021	82F034	82F034	82L010	82L010	82k003
Geographic Location	Halsey Rd	Gem Hill	Stewart	Stewart	W. Whatshan	W. Whatshan	Wragge Cr
Current Category Status	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed	Proposed
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Joint Approval Required?	Yes	Yes	No	No	No	No	No

TSL	EA1
Composite Map Name	E. Arrow Park
Map Reference	82K011
Geographic Location	E. Arrow Park
Current Category Status	Proposed
Change From Last Plan?	Yes
Joint Approval Required?	No

3.14. Forest Health

3.14.1. Issues

In general, major factors influencing forest health within an operating area will be identified and integrated into objectives and priorities in Total Resource Plans (TRPs) or Operating Area Plans (e.g. LRUPs, watershed plans). At the stand level, silviculture prescriptions will describe the incidence of forest health agents, based on field assessments, and determine an appropriate management strategy to reduce potential losses.

3.14.2. Measures to Manage and Protect

The SBFEP is committed to identifying all significant forest health factors within operating areas, determining incidence levels, and implementing specific management strategies where required. Areas that have been identified as having existing or potential forest health concerns will receive the highest planning and development priority.

The two primary objectives will be to:

- reduce damage and losses attributed to forest health agents to levels that are economically and socially acceptable, and
- prevent the build-up of forest health agents before they cause unacceptable levels of losses or damage.

Silviculture prescriptions will define the incidence levels of major pests within the area being prescribed from field reconnaissance information. These incidence levels are important in terms of determining an appropriate management strategy that will reduce the losses or, in some cases, control a forest pest while not enhancing other pest(s) in the process.

The major forest health factors that occur within the SBFEP operating areas are:

3.14.3. Diseases

Root diseases -	Armillaria (*Armillaria ostoyae*
	Phellinus *(Phellinus weirii)*
	Tomentosus *(Inonotus tomentosus)*
	Blackstain (*Leptographium wageneri)*
White pine blister rust -	*Cronartium ribicola*
Dwarf mistletoes -	*Arceuthobium spp.*
Pine stem rusts -	Western gall rust (*Endocronartium harknessii)*
	Comandra blister rust *(Cronartium comandrae)*
	Stalactiform blister rust *(Cronartium coleosporoides)*
	White pine blister rust – Cronartium ribicola

3.14.4. Insects

Bark beetles -	Mountain pine beetle (*Dendroctonus ponderosae)*
	Spruce beetle *(Dendroctonus rufipennis)*
	Douglas-fir beetle *(Dendroctonus pseudotsugae)*
	Western balsam bark beetle *(Dryocoetes confusus)*
Spruce weevil -	Spruce (white pine) weevil (*Pissodes strobi)*

3.14.4.1.ARMILLARIA

A significant forest health factor within many SBFEP operating areas is root disease - Armillaria root disease being of primary concern. Assessment and treatment strategies within the Root Disease Guidebook and regional guidelines will be followed in preparing silviculture prescriptions at the stand level. The primary strategy for dealing with root diseases will be through even-age management and regeneration of resistant species, however where site conditions are appropriate and where non-timber resource values are not compromised, root removal techniques (push-over or pop-up logging) will be utilized.

A research study incorporating aspects of root disease control, pushover logging, management for mixed (coniferous and deciduous) species, and assessing the applicability of partial cutting is continuing at Burton Creek (T.S.L. A38284). This study area is being managed in co-operation with the Ministry of Forests' Nelson Region research staff. Results of harvest treatments will be incorporated into management strategies for partial cutting and in addressing root diseases.

3.14.4.2. BLACKSTAIN ROOT DISEASE

Although few surveys have been conducted specifically for quantifying blackstain root disease, field observations indicate that many of the lodgepole pine stands appear to have high levels of blackstain root disease causing (combined with *Ips spp.* attack) significant mortality.

Black stain root disease is an obligate parasite and by definition requires a living host in order for it to survive. Because of this, the management implications are much less restrictive than for *Armillaria*. Clear-cut or partial-cut lodgepole pine stands can be immediately regenerated to lodgepole pine without risking infection from the remaining stumps. However, partial-cut stands still retain a source of inoculum that may ultimately lead to mortality in some of the leave trees.

3.14.4.3. WHITE PINE BLISTER RUST

Although there is limited survey information available quantifying the severity of blister rust (*Cronartium ribicola*) infection it can be assumed that the amount of white pine infected is significant in SBFEP operating areas.

Considering its exceptional growth and high value, white pine will be managed for wherever possible. Within silvicultural prescriptions, planting of genetically improved (rust resistant) stock, if available, will be considered on all suitable sites. Generally, wild origin white pine will only be accepted in surveys up to 10%, and no more than 20%, of stocking, unless pruning to reduce rust infection is prescribed.

3.14.4.4. DWARF MISTLETOES

Larch dwarf mistletoe is known to occur throughout the range of the host species and is known to occur in SBFEP operating areas. It can also infect lodgepole pine trees. No significant areas of lodgepole pine dwarf mistletoe have been identified to date in the operating areas.

Dwarf mistletoe can significantly affect the health of forests and the success of silvicultural systems and treatments. Therefore, in stands that are infected by dwarf mistletoe, assessment results and appropriate treatments will be documented in any silviculture prescription.

3.14.4.5. PINE STEM RUSTS

The Pine Stem Rust Management Guidebook will be used as a reference for detecting, identifying, assessing, and, if necessary, treating other pine stem rusts in managed forest stands. It is intended for use in the preparation of silviculture prescriptions and may also be useful in helping assess the hazard and risk of stem rusts over larger areas.

3.14.4.6. MOUNTAIN PINE BEETLE

Mountain pine beetle *(Dendroctonus ponderosae)* remains the most significant forest health agent and the highest priority to address within SBFEP chart areas. Aerial surveys, colour 1:10,000 scale photography, and ground surveys have been conducted over infestation areas within the Gem Hill, Mud Lake and Worthington Creek operating units. Salvage harvesting in these areas is currently on-going. Overview flights to assess the level of infestation will continue, concentrating on areas that have been identified as high risk. As well, the program of intensive monitoring and stand maintenance within the high profile Paulson / Mud Lake recreation area will be continued.

Some of the SBFEP operating areas have vast stands of mature lodgepole pine as a result of large wildfires that occurred approximately a century ago. Many of these mature pine stands are very susceptible to attack by mountain pine beetles (*Dendroctonus ponderosae*) and must now be managed in order to reduce or prevent timber losses as well as control the beetle populations where possible. The mountain pine beetle has been active for decades in many of these areas. As long as there are susceptible stands available the beetle will continue to cause varying degrees of mortality.

The District Forest Health Technician will conduct annual aerial surveys during mid-July to mid-August. The information collected is used to maintain a historic database, evaluate broad population trends, identify new infestations and identify areas for more detailed aerial mapping or ground surveys.

Ground surveys will be conducted in some areas identified from the aerial mapping flights. These surveys are designed to collect information on current population levels, population trends, distribution, salvage/control opportunities, stand hazard and risk, etc..

Assessments for hazard and risk will be undertaken for all susceptible Pl stand types in the operating areas following the Shore/Safranyik procedures. This information will be used to prioritize stands in terms of further assessments or treatments.

The main strategies that will be used to address mountain pine beetle infestations are:

3.14.4.6.1.1. Suppression

This strategy will be employed where the objective is to reduce the outbreak to a size and distribution that can be handled with normal resources.

3.14.4.6.1.2. Prevention

The intent of this strategy is to reduce future losses through the manipulation of forest cover over the long term. Future impacts from mountain pine beetle activity will be greatly reduced by establishing a mosaic of species and age classes which reduce a stand's susceptibility or by modifying a stand in such a way as to make it less attractive to beetle attack (e.g. beetle proofing).

3.14.4.6.1.3. Salvage

Salvage is a strategy that will normally be applied to areas where there are extensive, chronic, outbreaks, over large portions of the susceptible timber type where management efforts would be ineffective in substantially reducing the beetle populations, but where there are significant volumes of dead timber that must be utilized before it deteriorates.

3.14.4.6.1.4. Holding Action

The intent of a holding action strategy is to maintain an existing outbreak at a relatively static level. It is a delaying strategy until adequate resources are available or access is created, allowing for more aggressive management.

3.14.4.6.1.5. Maintain Low

The maintain low strategy is applicable in chronically infested stands where the spread of the beetle has been reduced to a level that can be dealt with under a base or normal level program and within the annual allowable cut.

3.14.4.6.1.6. Abandon

Areas with existing beetle activity may be abandoned if management efforts would be ineffective in reducing beetle populations or where there is no short term (less than five years) possibility of salvaging dead timber due to various management constraints such as wildlife habitat, terrain stability, operability, watershed issues, etc.

Selection of the appropriate strategy for a particular area will be based upon the following factors:

- the extent and distribution of beetle infestations in the area,
- Integrated Resource Management (IRM) objectives,
- the expected impact of the beetle in adjacent management areas, and
- extent of susceptible stands in the area.

A Baiting strategy will be developed in close consultation with the District Forest Health Technician. Pheromone baits may be deployed for:

- containing an existing infestation,
- use with single tree treatments, and/or
- monitoring beetle flight periods.

3.14.4.7. SPRUCE LEADER (WHITE PINE) WEEVIL

Leader weevil damage does not cause direct mortality, but can produce unacceptable growth loss and stem deformation in young spruce stands resulting in loss of volume and wood quality, and longer rotation time.

At present, few, if any, practical options are available to reduce weevil damage in infested susceptible stands.

3.15. Protection

3.15.1. Issues

Forest protection, within this section of the FDP refers to the suppression of wildfires, management of fuel loading and hazard, and the use of fire as a management tool.

3.15.2. Measures to Manage and Protect

The resources of the Ministry of Forests will be available to suppress wildfires that occur within operating areas of the Arrow SBFEP.

Total resource development plans (TRPs) will include fuel management and prescribed fire strategies in planning landscape harvest patterns and stand level prescriptions. Planning will consider historic fire starts & return periods, expected fuel loading for timber types present and harvest systems planned, fuel breaks & burn control strategies, silviculture objectives, and historic fire weather indices experienced.

Industrial operations related to the SBFEP will be conducted in compliance with the Forest Fire Prevention and Suppression Regulation. Adequate resources for the control and mop-up of prescribed burning will be planned and budgeted for. Hazard abatement measures will be kept current with operations and burning of piles and landings will generally be done later in the season to minimize the risk of fire escape and to reduce smoke management concerns.

The SBFEP will strive to minimize the amount of smoke emissions due to prescribed burning by utilizing alternative strategies wherever possible, such as no treatment, mechanical site preparation and spring burning. Guidelines for smoke management will be followed and all site preparation/fuel management strategies will be as per the approved SP. A post-harvest assessment will determine the need for appropriate hazard reduction on cutblocks and landings.

4. HARVESTING SECTION - CATEGORY A CUTBLOCKS

4.1. Harvest Summary Table

Harvest block summary tables are included in Appendix A which reference blocks shown on the FDP development maps and describe block location, area, timber harvest volume, silviculture system, harvest method, landscape unit, site factors, status of assessments, approval status, and other information. For the SBFEP, tables and maps indicate the calendar year in which a harvest block (TSL) is expected to be sold, which may or may not coincide with the year in which logging takes place.

4.1.1. Consistency with Required Assessments

In accordance with Sections 18 and 20 of the OPR, for all proposed Category A cutblocks and cutblocks approved as Category A in the most recently approved FDP;

- The status of required assessments - including terrain stability field assessments, visual impact assessments, pest incidence surveys required by the District Manager, archaeological impact assessments, and riparian assessments - is shown in the harvest summary tables.

- Where terrain stability field assessments are completed, cutblocks are consistent with the results of the terrain stability field assessments and comply with Sections 7(2), 8(3), 8(4), and with Section 7(3)(a) (community watersheds) or Section 8(2)(a) of the Timber Harvesting Practices Regulation.

- Where a terrain stability field assessment is still required this will be completed, the harvest block summary tables of this FDP will be amended and the block will be confirmed to be consistent with the results of the assessment prior to approval of any cutting authority.

5. ACCESS MANAGEMENT

5.1. Road Layout and Design

All proposed roads will be located based on total chance planning concepts to reduce road lengths and densities, optimize efficiency, provide for user safety and to avoid or minimize potential negative impacts on other resource values. Located roads will be surveyed to a level appropriate to the terrain, design and construction requirements. Geometric road designs, with plans and profiles, will be prepared for all roads proposed on slopes greater than 50% or where a terrain stability field assessment indicates a moderate to high likelihood of landslides. Wherever possible, the required overview and field level assessments required will be completed prior to preparing the road design. In all cases, the required assessments will be completed prior to road construction. The Engineering Access Management Table included in Appendix B indicates where assessments are required and when these have been completed.

5.2. Road Construction and Modification

Road construction standards are based on safety, vehicle size and type (public/industrial), anticipated traffic volumes, planned term or life of the road, season of use, soil types and terrain stability, and potential for impacts to identified resource values. Proposed road construction and modification is shown on the development overlays of the FDP maps, and is described in the Engineering Access Management Table included in Appendix B. The proposed year of construction or modification is provided for information only and is not intended to indicate that timing of proposed activities is critical to resource management. All proposed and existing roads are all-season roads, unless identified by the suffix "W" in the Type of Road column of the table. All proposed and existing bridges are permanent structures unless identified in the table with a "T" before the bridge number in the Bridge column.

5.3. Road Maintenance

All existing and newly constructed roads will be maintained until determined by the District Manager to be permanently deactivated. Active Forest Service Roads (FSRs) within Small Business operating areas will be inspected annually, seasonally and/or after major storm events as outlined in the Nelson Region Framework for Engineering Inspections. Bridges, and culverts greater than 2 metres in diameter, are inspected biannually by the Nelson regional engineering program. The Timber Sale Licensee or Road Use Permit holder(s) will maintain roads actively used for timber harvesting. In areas where there is no active industrial activity, FSR's will be inspected and maintained by the Arrow Forest District engineering program.

5.4. Road Deactivation

The intent of the Small Business deactivation program is to restore or maintain natural drainage patterns, minimize soil erosion potential and ensure long term slope stability while providing the highest level of access suitable to the terrain, current and future needs, and considering other resource values. In general, the level of road deactivation (temporary, semi-permanent or permanent) and vehicle accessibility will be determined by the anticipated future industrial use of the roads, as well as safety, slope stability, other users and resource management objectives.

Permanent deactivation is proposed for the majority of in-block and short-term operational roads immediately following harvesting activities. Long term roads and FSR's with no future use planned for ten or more years will be semi-permanently, or permanently deactivated depending on slope stability, and resource management considerations. Actively used roads will be temporarily, or seasonally, deactivated when not being used for industrial traffic. All short-term roads will be deactivated within five years following construction.

Roads permanently deactivated will be inspected for a minimum of two years following deactivation to ensure slope stability and natural drainage is maintained. Roads semi-permanently deactivated will be inspected at a frequency commensurate with expected use and risk to other resource values. Roads temporarily deactivated will be considered to be maintained. All roads planned for deactivation are identified on the development overlay of the FDP maps, and in the Engineering Access Management Table included in Appendix B. Permanent barriers to public access are indicated on maps and in tables as "XWD". A Key is included in Appendix B which defines codes used in the table.

5.5. Additional Arrow District Road Information

Section 18(4.1) of the FPC requires that an FDP for the SBFEP must identify the approximate location of existing and proposed roads that are:

a. FSRs that are not required to be identified by the holders of a major licence, certain forms of TSL, or a woodlot Licence; and
b. road permit roads that are not required to be identified by the holders of certain forms of TSL.

For roads within SBFEP operating areas, this information is provided as for roads that are the responsibility of the SBFEP. Information for roads outside of SBFEP operating areas is provided within the tables and 1:50,000 scale maps that comprise the District Access Management Plan for the Arrow Forest District, submitted under separate cover.

6. SOURCES OF INFORMATION

Information Source	**Date of publication**
Kootenay-Boundary Higher Level Plan Order	January 31, 2001 (date of effect)
Biodiversity Seral Stage Status Report, Arrow Forest District	January 8, 2001
District Manager's Instructions for Preparing Forest Development Plans, Arrow Forest District	February 17, 2000
District Manager's Instructions for Preparing Forest Development Plans, Arrow Forest District	February 18, 1999
Ministry of Environment, Lands and Parks Information for the Preparation of the 1999 Forest Development Plans	1999
Notice of Proposed Objectives for Recreation Sites and Recreation Trails, Arrow Forest District	1999
Order to Establish Landscape Units and Biodiversity Emphasis Objectives for the Arrow Forest District	April 8, 1998
District Manager's Instructions For Preparing The 1998 Forest Development Plan, Arrow Forest District	April 1, 1998
Memorandum of Understanding Between Ministry of Forests and Ministry of Environment, Lands and Parks - 1998 Forest Development Plans	1998
Kootenay/Boundary Land Use Plan Implementation Strategy, Kootenay Inter-Agency Management Committee	June, 1997
West Kootenay-Boundary Land-Use Plan, Government of British Columbia	March, 1995

7. LIST OF APPENDICES

7.1.1. Appendix A - Harvest Summary Table

7.1.2. Appendix B - Engineering Access Management Table

7.1.3. Appendix C - Detailed Assessments

7.1.4. Appendix D - Riparian Classifications

7.1.5. Appendix E - Biodiversity Seral Stage Status Report - Arrow Forest District

7.1.6. Appendix F - E.C.A.'s for Domestic Watersheds where Development is Proposed

7.1.7. Appendix F - E.C.A.'s for Areas Draining onto Terrain Hazard Polygons

7.1.8. Appendix G - Patch Size Analyses

7.1.9. Appendix H - Ungulate Winter Range Harvest Analyses

7.1.10. Appendix I - Forest Health Survey Maps

7.1.11. Appendix J - Forest Practices Variances

7.1.12. Appendix K - Advertisements

7.1.13. Appendix L - Referrals, Correspondence and Review Comments

7.1.14. Appendix M - Summary of Changes from Initial Plan Preparation

7.1.15. Appendix N - Approvals and Amendments to Forest Development Plan

7.1.16. Appendix O - Key Map (1:250,000 Scale)

8. MAPS

The following maps are a component of this FDP.

8.1. Key Map

A key map (1:250,000 scale) is included in Appendix O showing the location of SBFEP operating areas covered by this plan.

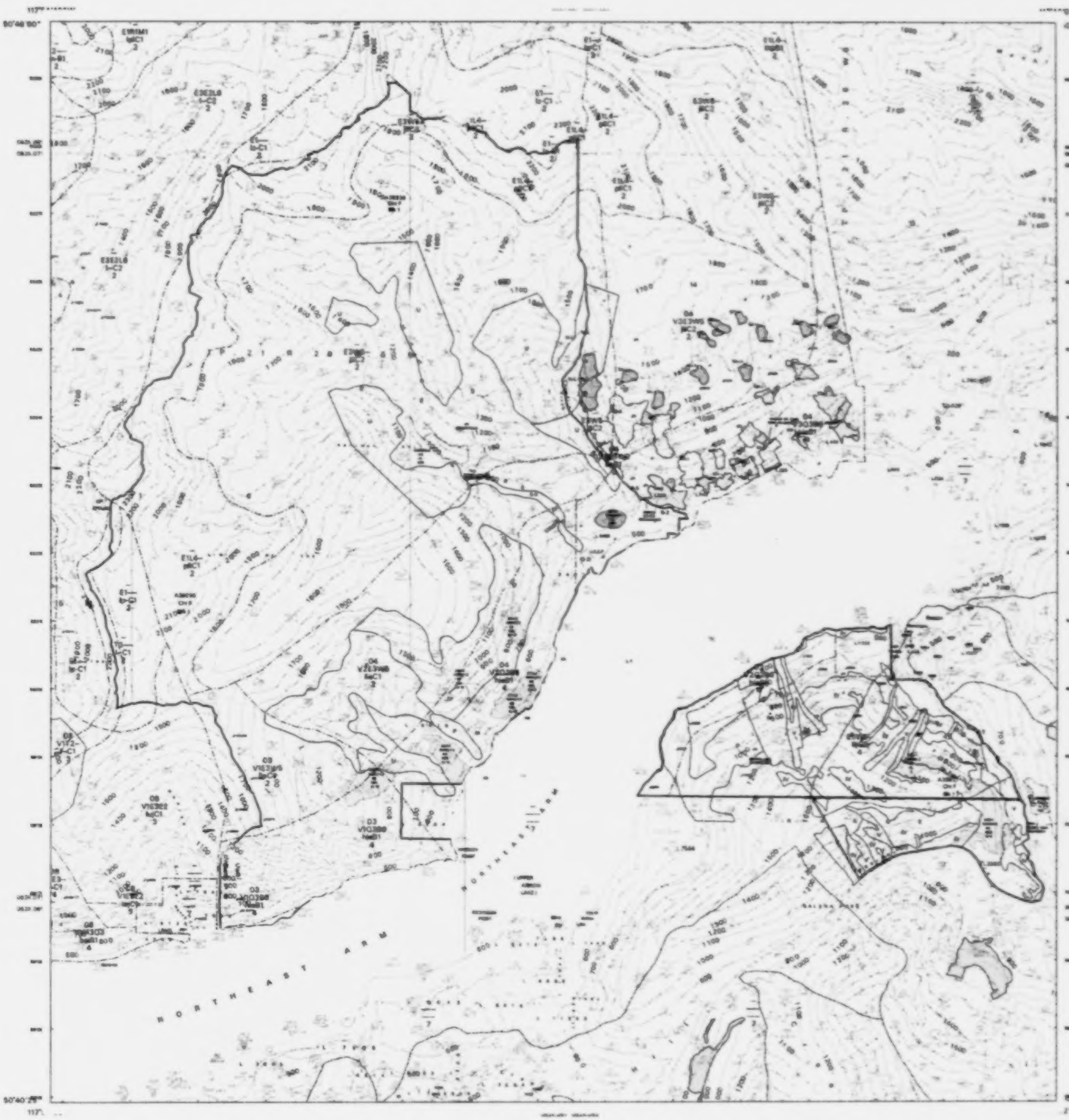
8.2. List of Maps and Overlays

Overview Maps (1:250,000) (submitted under separate cover):

- Domestic & Community Watersheds
- Landscape Units
- Landuse Plan Designations (KBLUP)
- Biogeoclimatic Ecosystem Classification
- Biodiversity - Natural Disturbance Types
- Biodiversity Emphasis Options
- Caribou Habitat Areas – Arrow RMZ (KB-HLP)
- Scenic Areas - Arrow RMZ (KB-HLP)
- Arrow Forest District Access Management Plan

Forest Development Plan Maps (1:20,000)

- Base Maps (Forest Cover Inventory, Administrative, Terrain)
- Resources Overlay (Non-Timber Resources & Assessment Results)
- Development Overlay (Proposed Roads & Blocks, Silviculture Status, Road Status)


NORTHEAST ARM
NORTHEAST ARM
50°40'25"
50°48'00"

DEVELOPMENT OVERLAY

SMALL BUSINESS FOREST ENTERPRISE PROGRAM

FOREST DEVELOPMENT PLAN

ARROW FOREST DISTRICT
NELSON FOREST REGION

BEATON

RESOURCE OVERLAY

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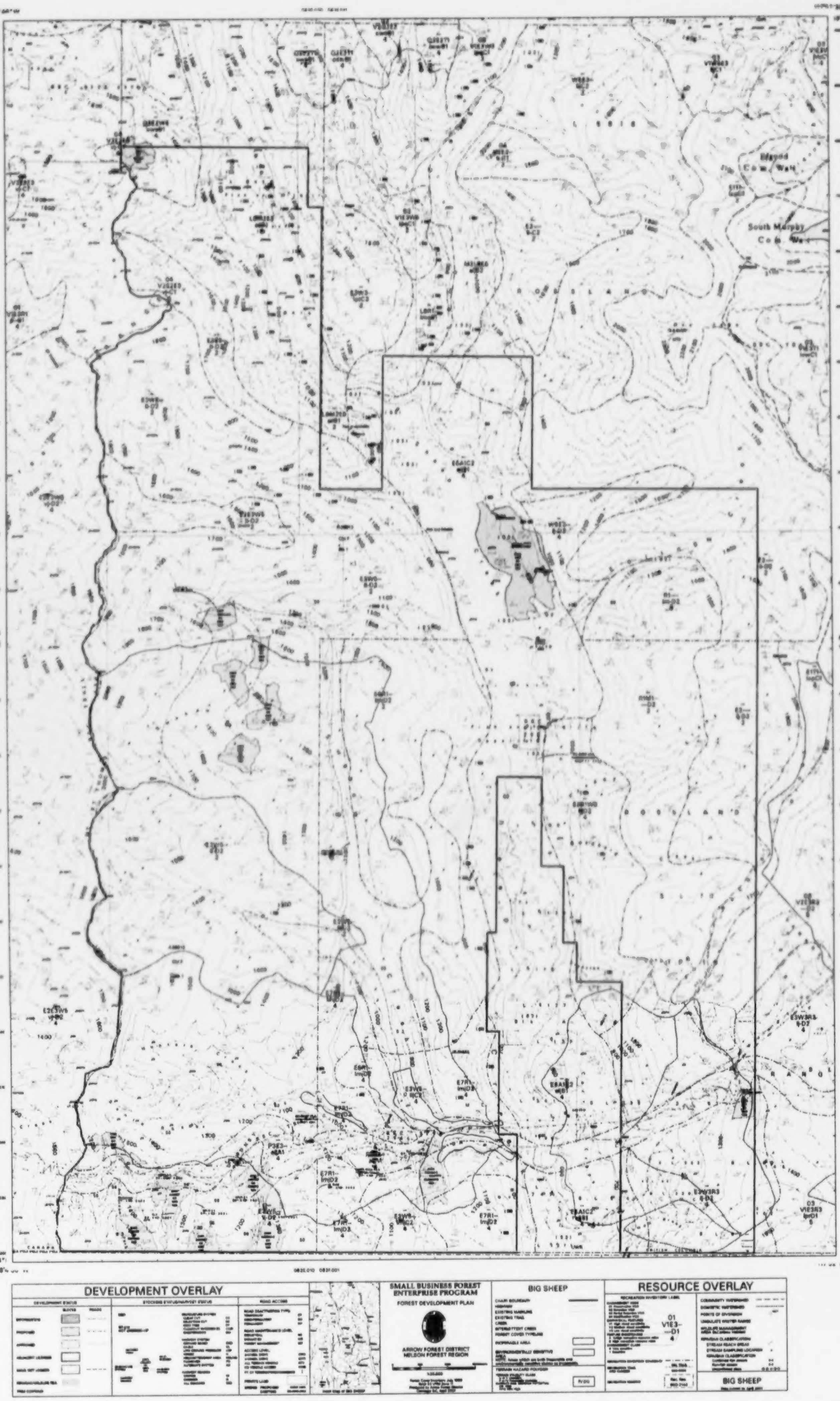
BEATON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FOREST DEVELOPMENT PLAN
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NELSON FOREST REGION
BIG SHEEP
CHART BOUNDARY
HIGHWAY
EXISTING HAULING
EXISTING TRAIL
CREEK
INTERMITTENT CREEK
FOREST COVER TYPELINE
INOPERABLE AREA
ENVIRONMENTALLY SENSITIVE AREA
TERRAIN HAZARD POLYGON
RESOURCE OVERLAY
RECREATION INVENTORY LABEL
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V1E3-
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COMMUNITY WATERSHED
DOMESTIC WATERSHED
POINTS OF DIVERSION
UNGULATE WINTER RANGE
WILDLIFE MANAGEMENT AREA
RIPARIAN CLASSIFICATION
STREAM REACH BREAK
STREAM SAMPLING LOCATION
BIG SHEEP
0825.010
0827.001
South Murphy
Cam Wall
ROSSLAND
BRITISH COLUMBIA
CANADA
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lm/D2
E3W6-
E2C3W6
E8A1C2
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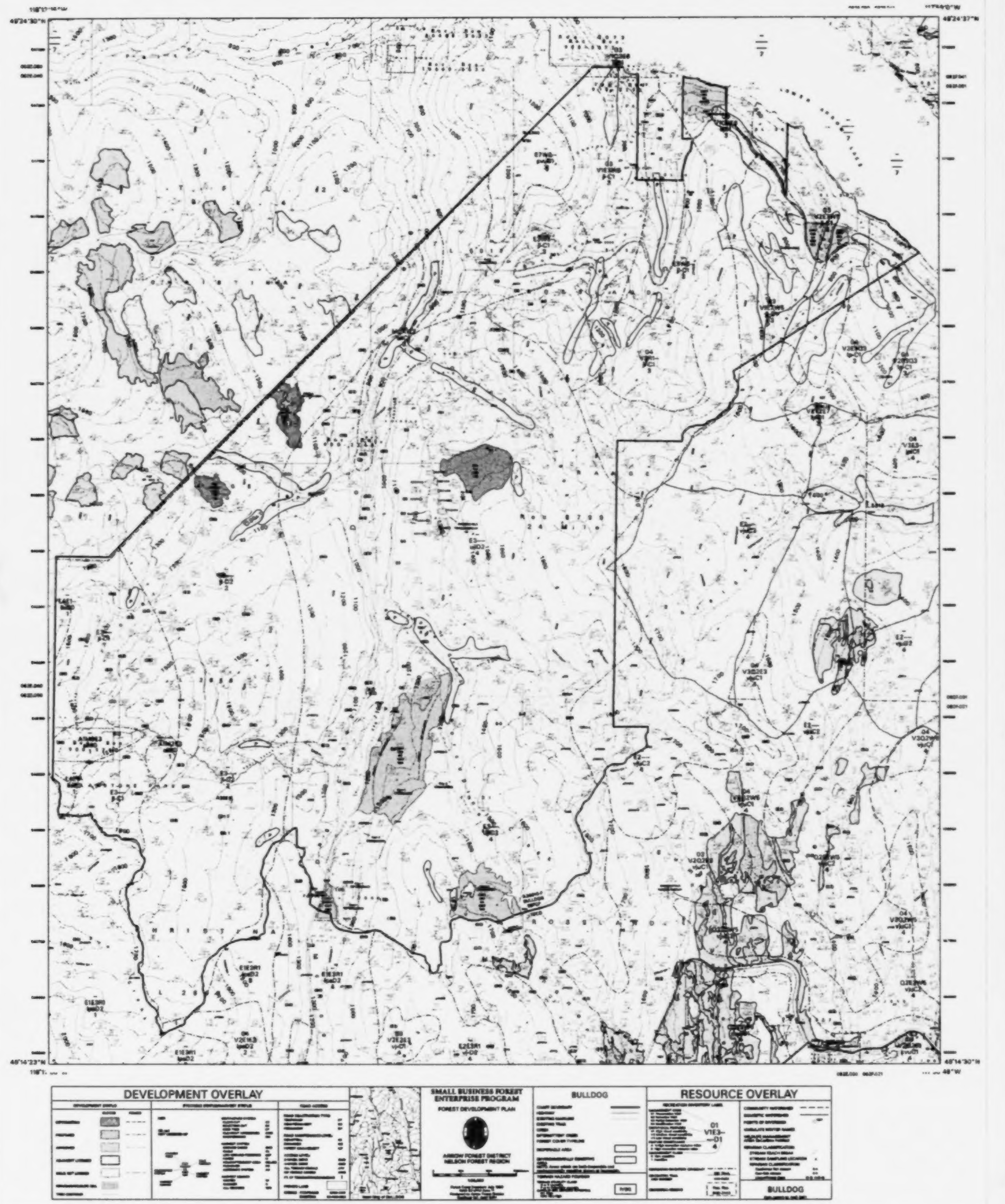
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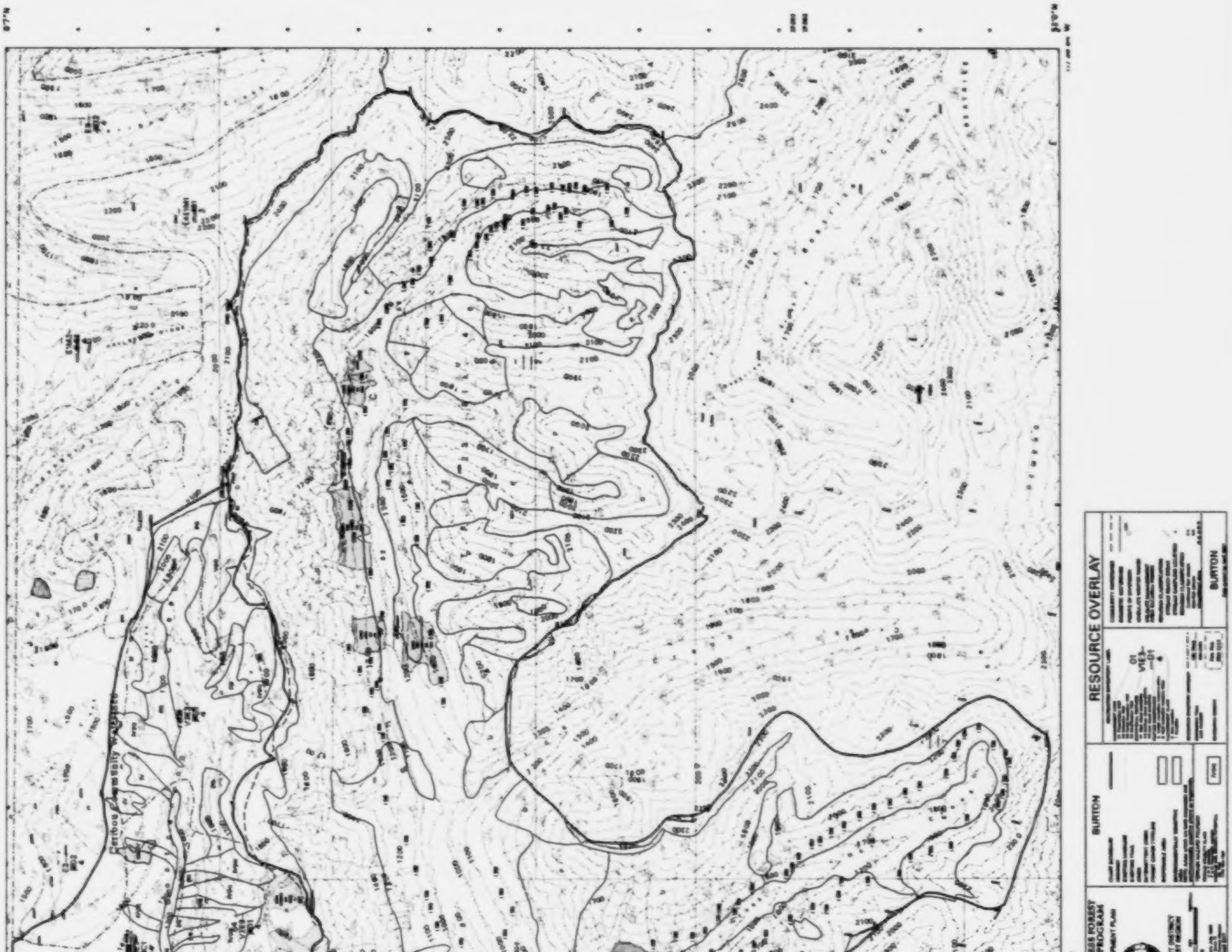
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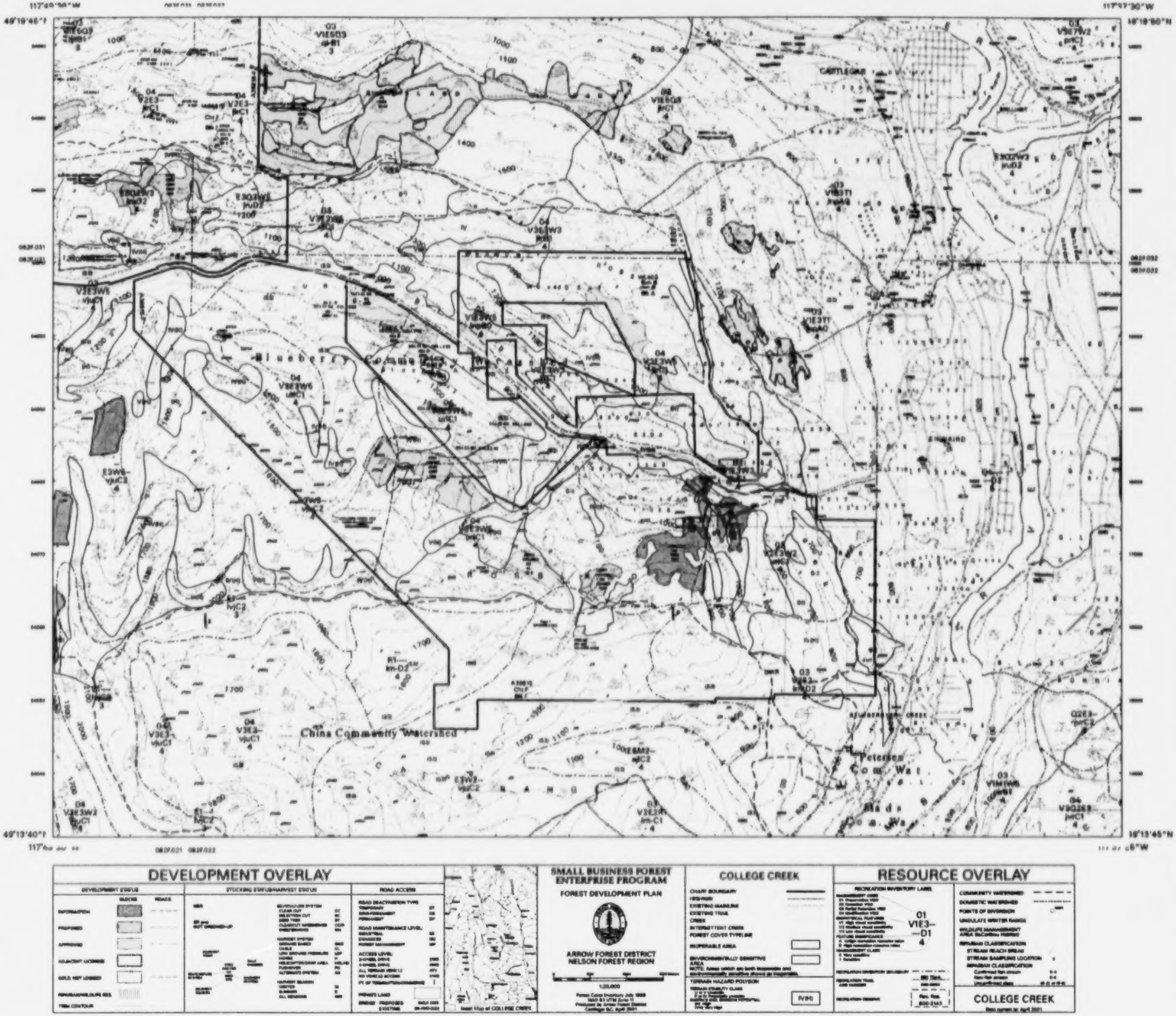
BURTON

DEVELOPMENT OVERLAY
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FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
1:20,000
COLLEGE CREEK
CHART BOUNDARY
EXISTING TRAIL
CREEK
INTERMITTENT CREEK
FOREST COVER TYPELINE
INOPERABLE AREA
ENVIRONMENTALLY SENSITIVE AREA
TERRAIN HAZARD POLYGON
IV(H)
RESOURCE OVERLAY
RECREATION INVENTORY LABEL
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COMMUNITY WATERSHED
DOMESTIC WATERSHED
POINTS OF DIVERSION
UNGULATE WINTER RANGE
RIPARIAN CLASSIFICATION
STREAM REACH BREAK
STREAM SAMPLING LOCATION
COLLEGE CREEK
CASTLEGAR
Blueberry Comm. Wat.
China Community Watershed
Petersen Com. Wat.
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49°13'45"N
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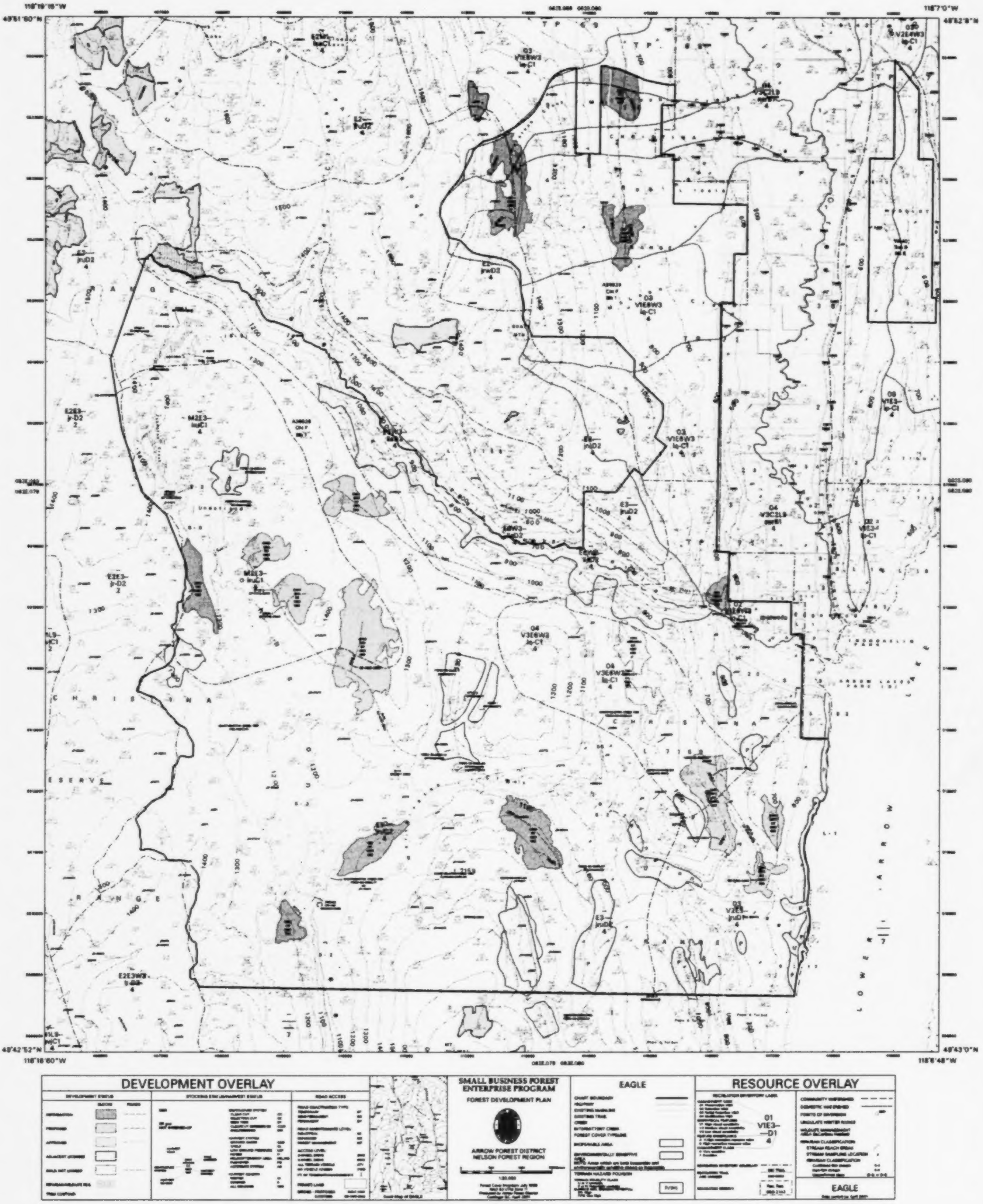
082F.021
082F.022

118°19'15"W
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CHRISTINA RANGE
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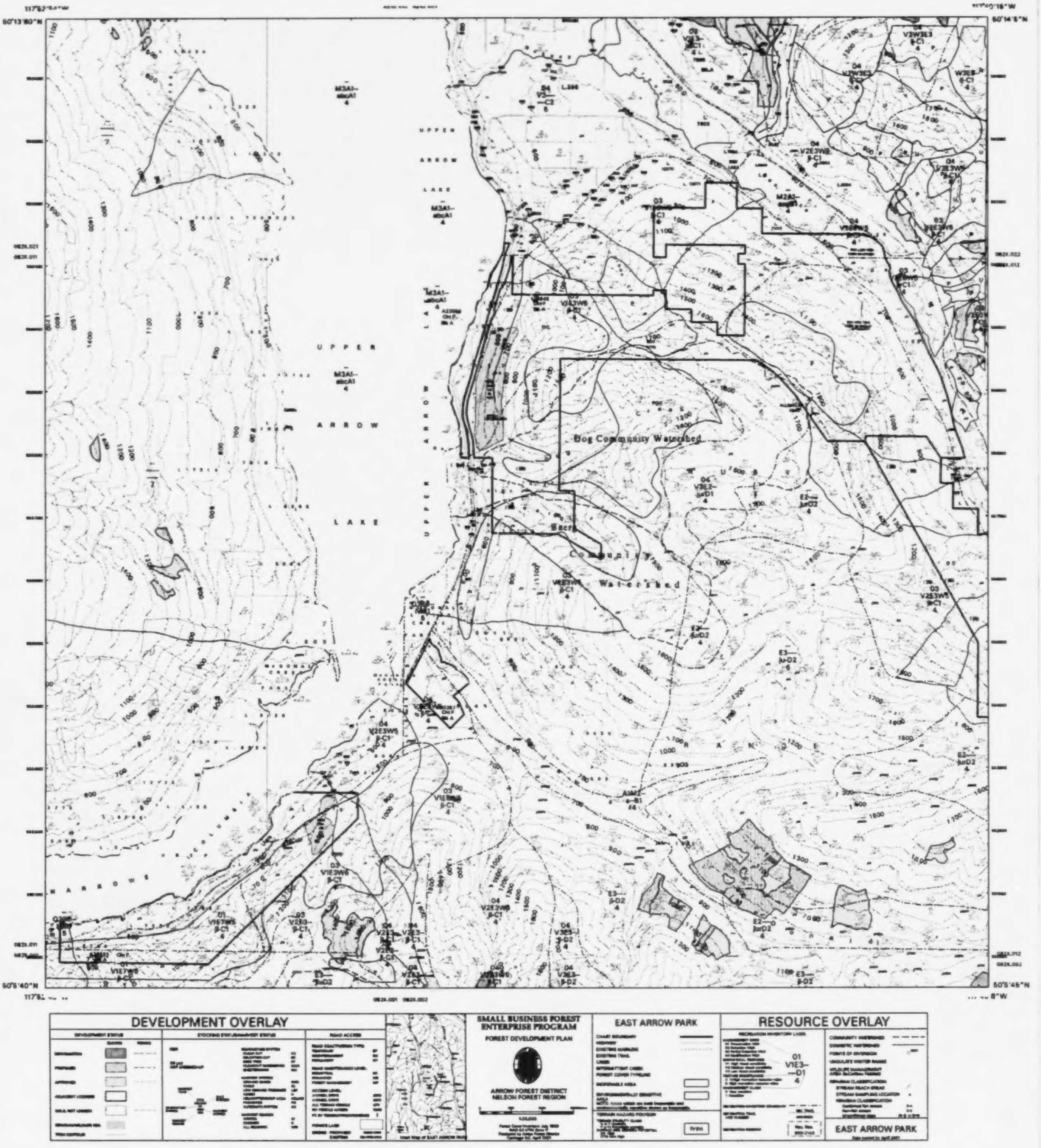
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Dog Community Watershed
Community Watershed
NARROWS
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NELSON FOREST REGION
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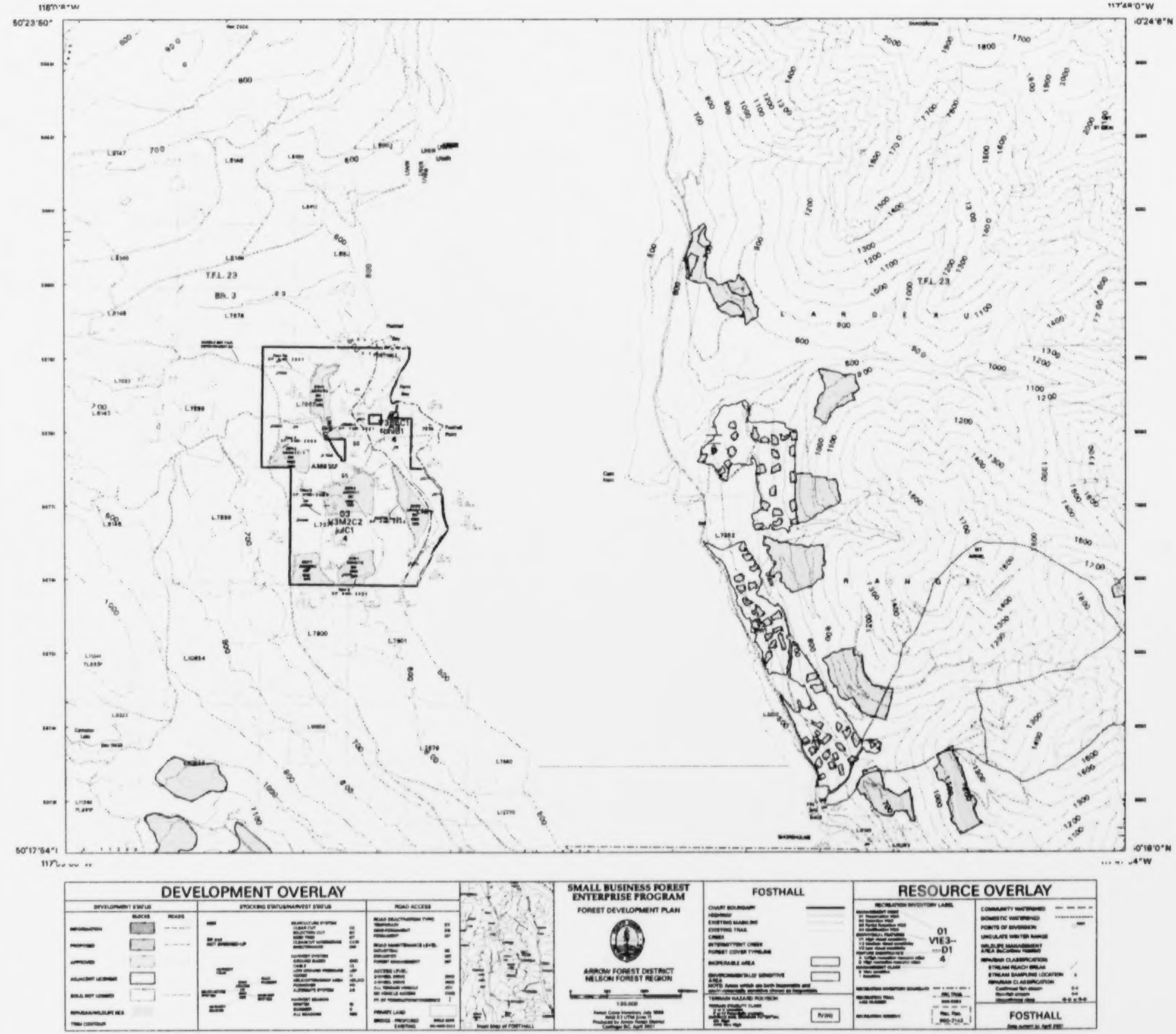
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ROADS
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ARROW FOREST DISTRICT
NELSON FOREST REGION
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INTERMITTENT CREEK
FOREST COVER TYPELINE
INOPERABLE AREA
ENVIRONMENTALLY SENSITIVE AREA
TERRAIN HAZARD POLYGON
IV(III)
RESOURCE OVERLAY
RECREATION INVENTORY LABEL
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COMMUNITY WATERSHED
DOMESTIC WATERSHED
POINTS OF DIVERSION
UNGULATE WINTER RANGE
WILDLIFE MANAGEMENT AREA
RIPARIAN CLASSIFICATION
STREAM REACH BREAK
STREAM SAMPLING LOCATION
RIPARIAN CLASSIFICATION
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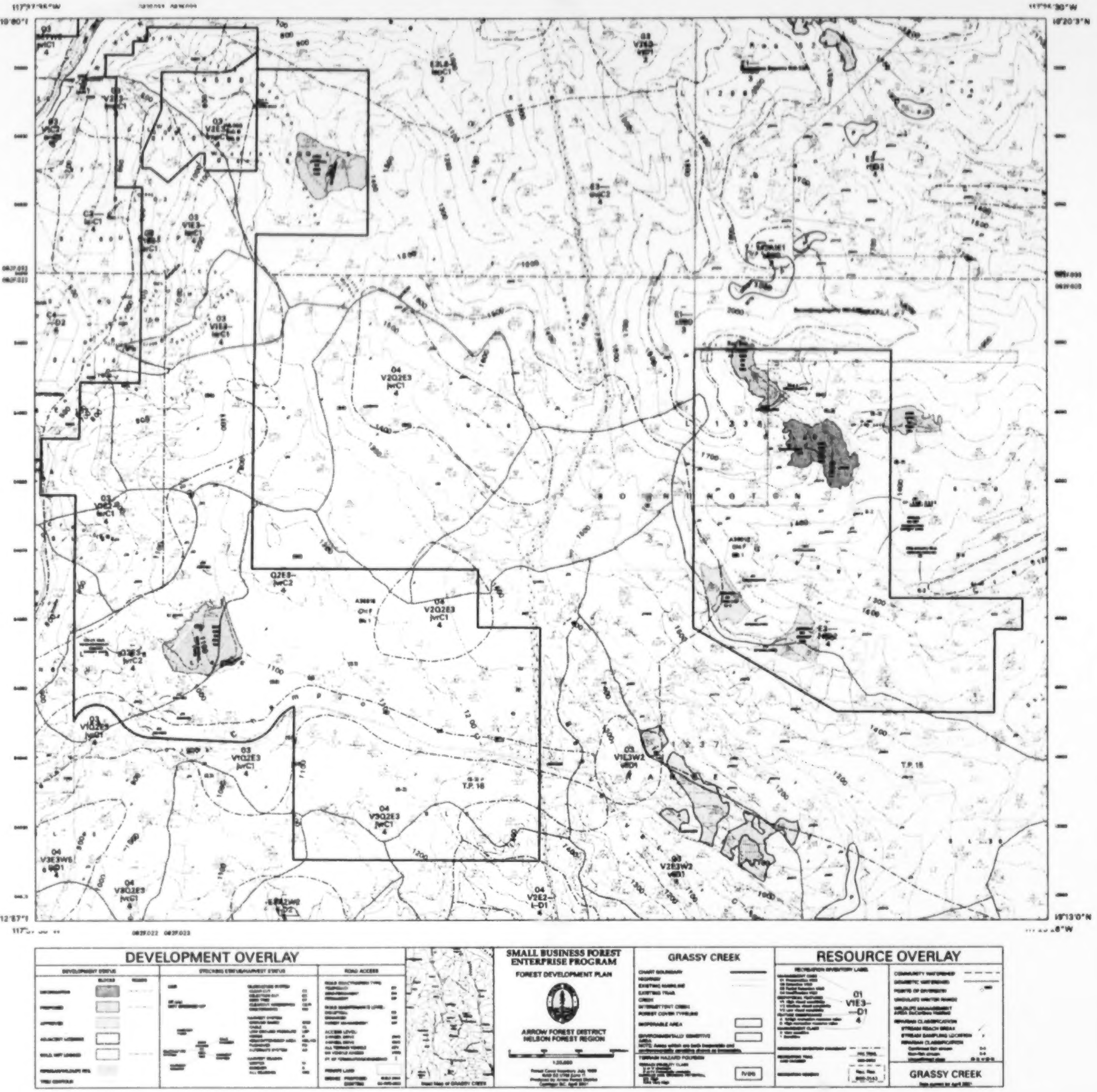
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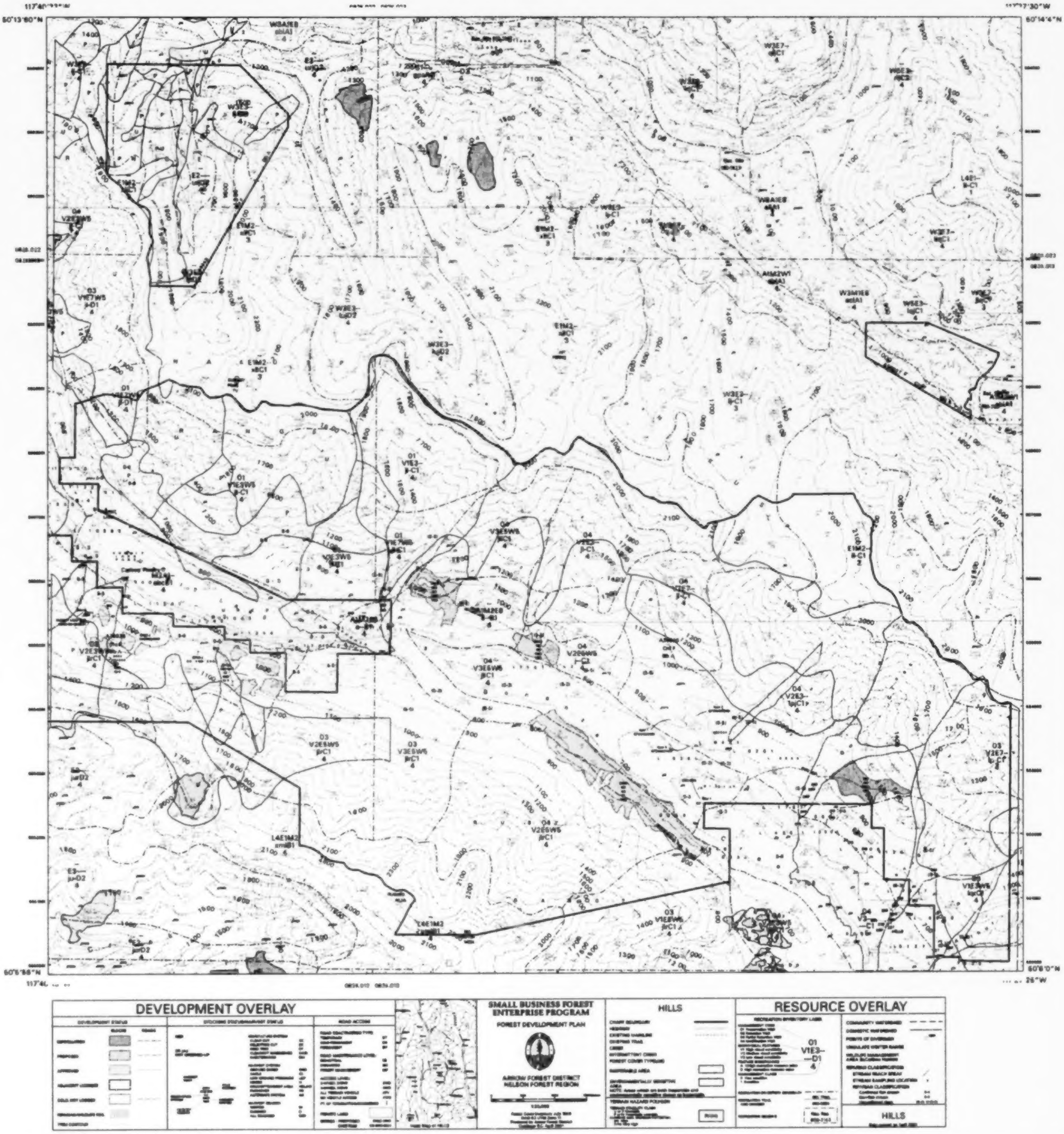DEVELOPMENT OVERLAY
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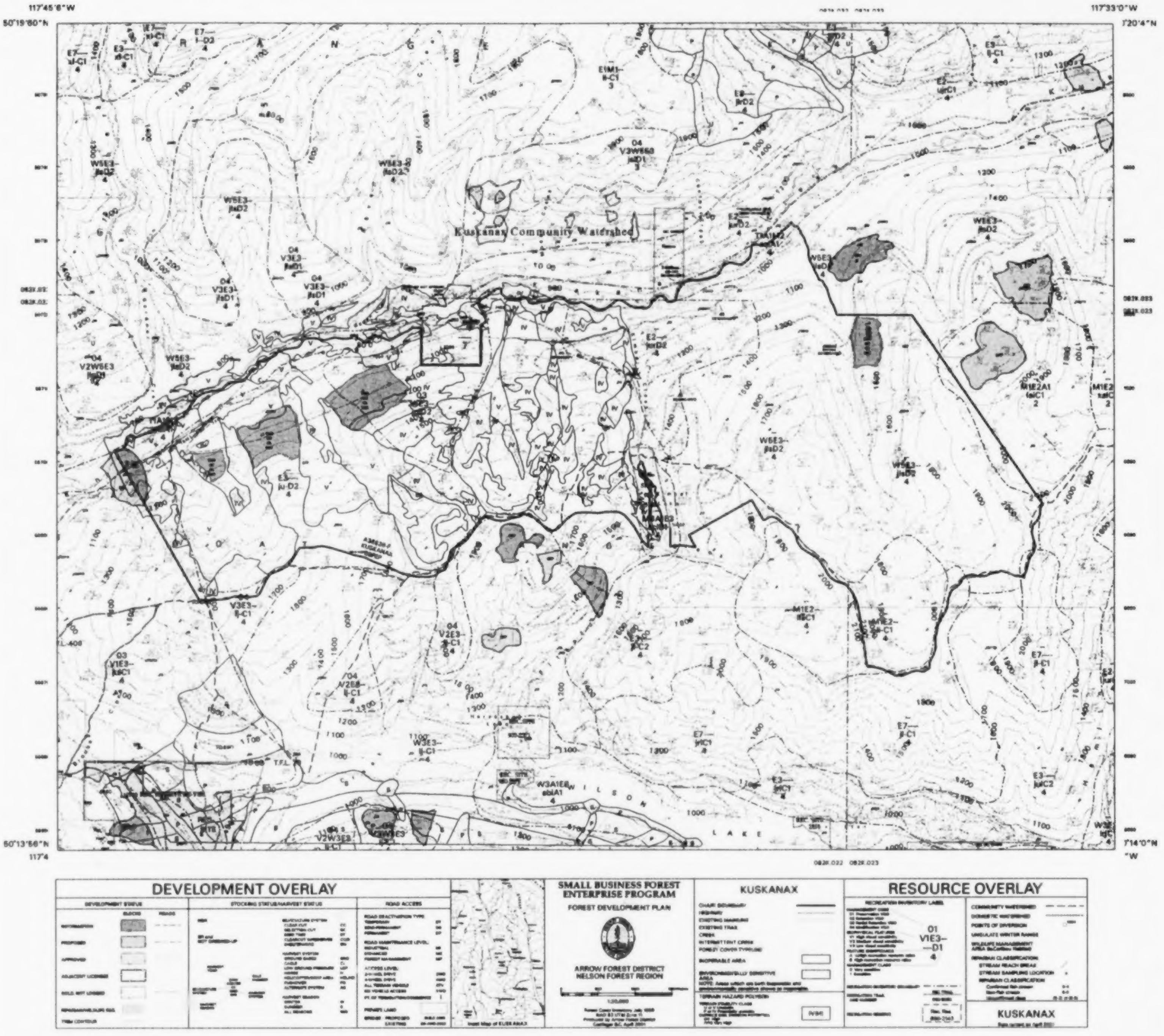
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STOCKING STATUS/HARVEST STATUS
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ARROW FOREST DISTRICT
NELSON FOREST REGION
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KUSKANAX
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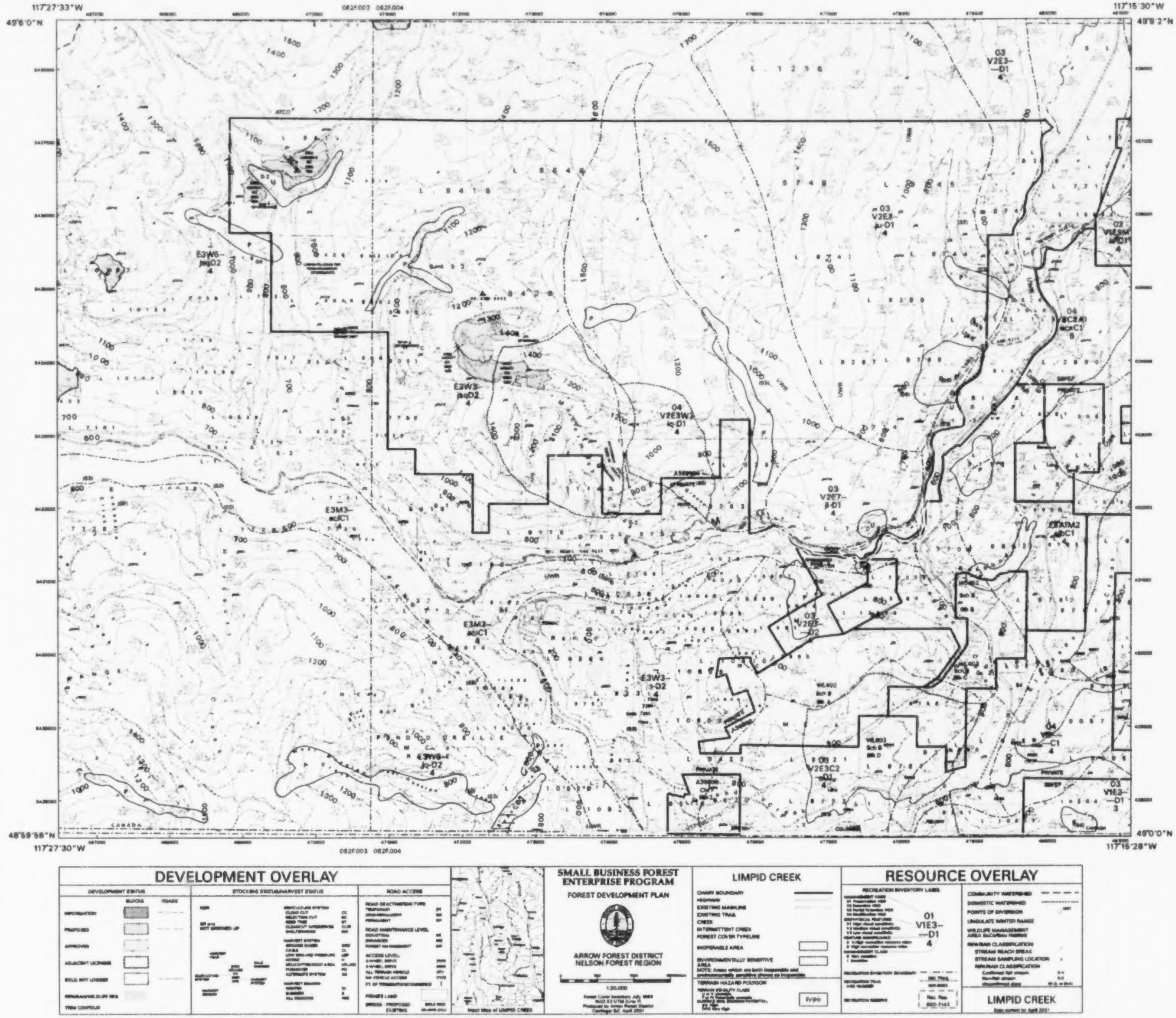
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VEC2A1
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8
02
V1E3M
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acIC1
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E3W6-4
jq-D2
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DEVELOPMENT OVERLAY
DEVELOPMENT STATUS
BLOCKS
ROADS
STOCKING STATUS/HARVEST STATUS
ROAD ACCESS
SMALL BUSINESS FOREST
ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
1:20,000
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RESOURCE OVERLAY
RECREATION INVENTORY LABEL
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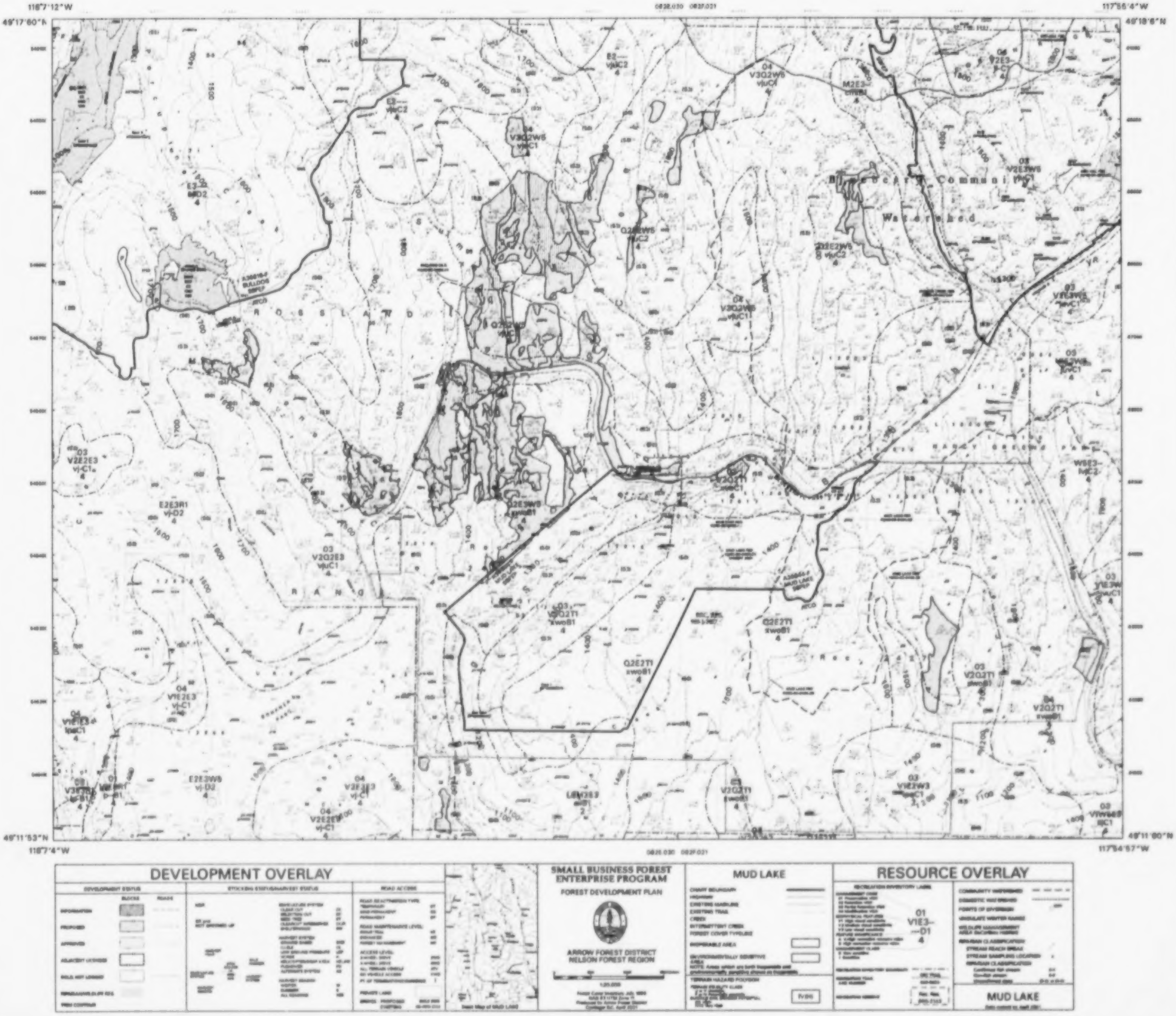
LIMPID CREEK

118°7'12"W
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ROSSLAND
Blueberry Community Watershed
RANGE
49°11'53"N
118°7'4"W
117°54'57"W
49°11'60"N
DEVELOPMENT OVERLAY
SMALL BUSINESS FOREST ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
1:20,000
Index Map of MUD LAKE
MUD LAKE
INOPERABLE AREA
ENVIRONMENTALLY SENSITIVE AREA
TERRAIN HAZARD POLYGON
IV(H)
RESOURCE OVERLAY
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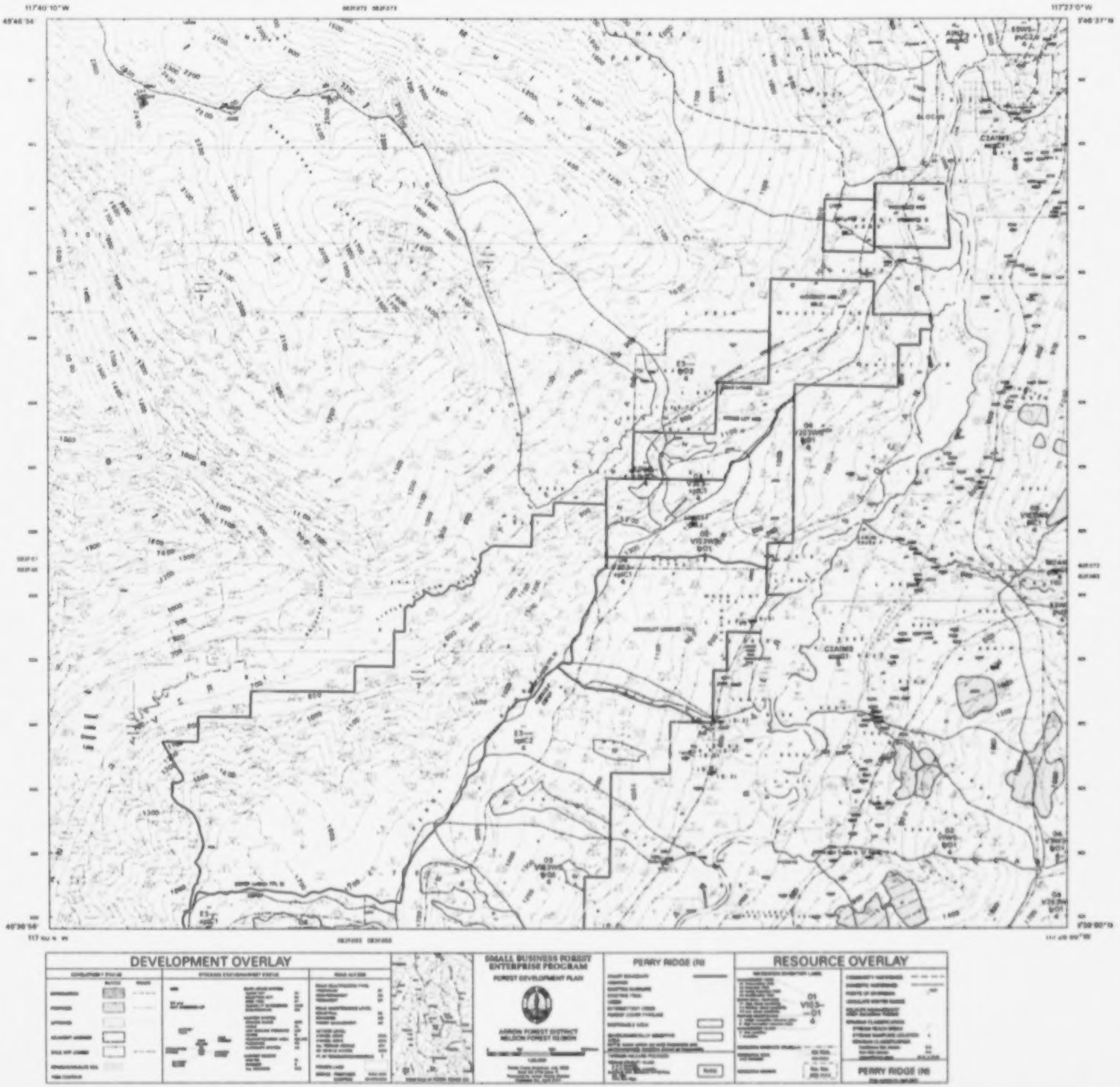
MUD LAKE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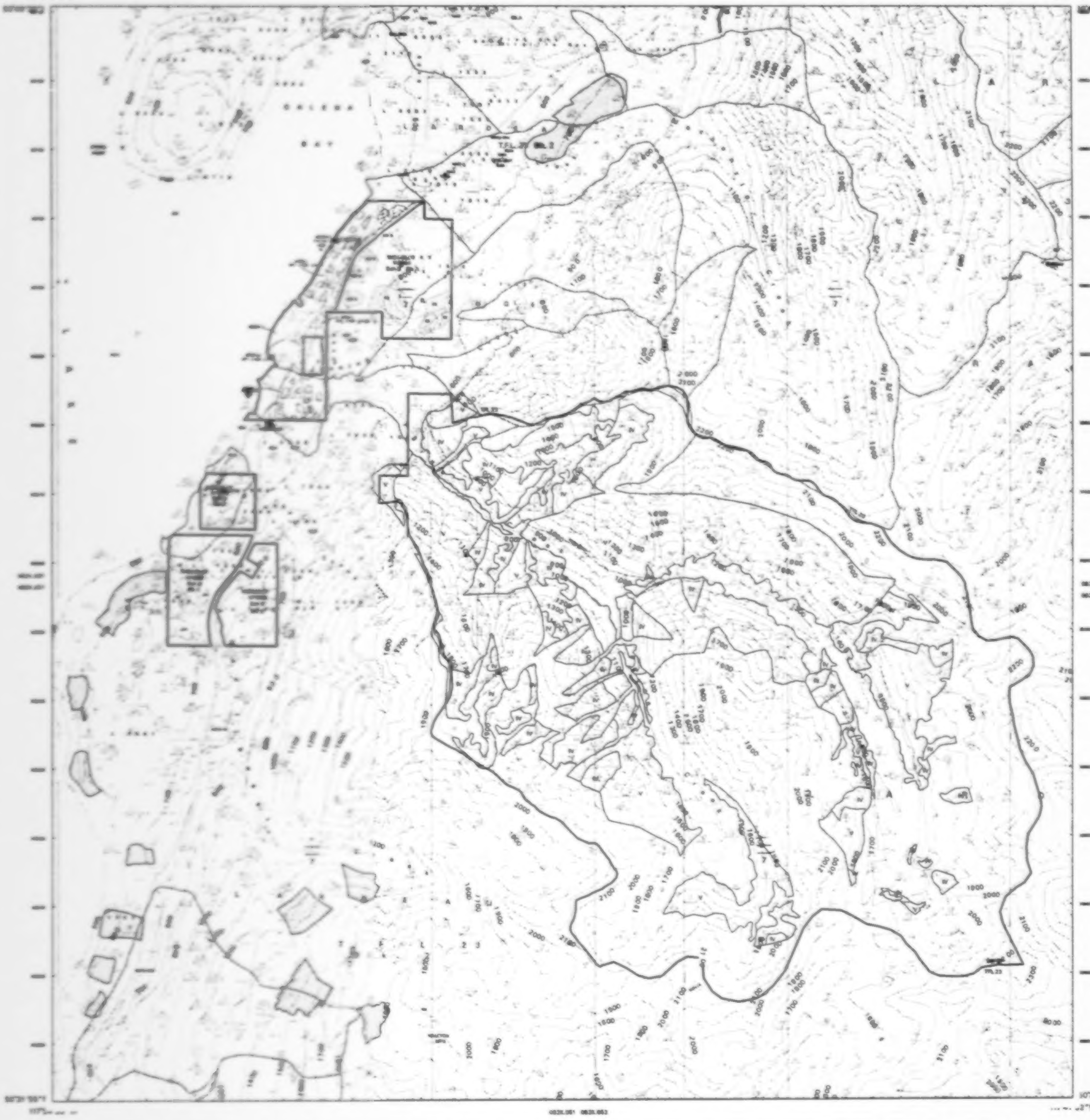
SMALL BUSINESS FOREST ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
PERRY RIDGE (N)
RESOURCE OVERLAY
PERRY RIDGE (N)
117°40'10"W
117°27'0"W

DEVELOPMENT OVERLAY
SMALL BUSINESS FOREST ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
NORTH WHATSHAN
RESOURCE OVERLAY
NORTH WHATSHAN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DEVELOPMENT OVERLAY

SMALL BUSINESS FOREST ENTERPRISE PROGRAM

FOREST DEVELOPMENT PLAN

ARROW FOREST DISTRICT
NELSON FOREST REGION

PAYNE CREEK

RESOURCE OVERLAY

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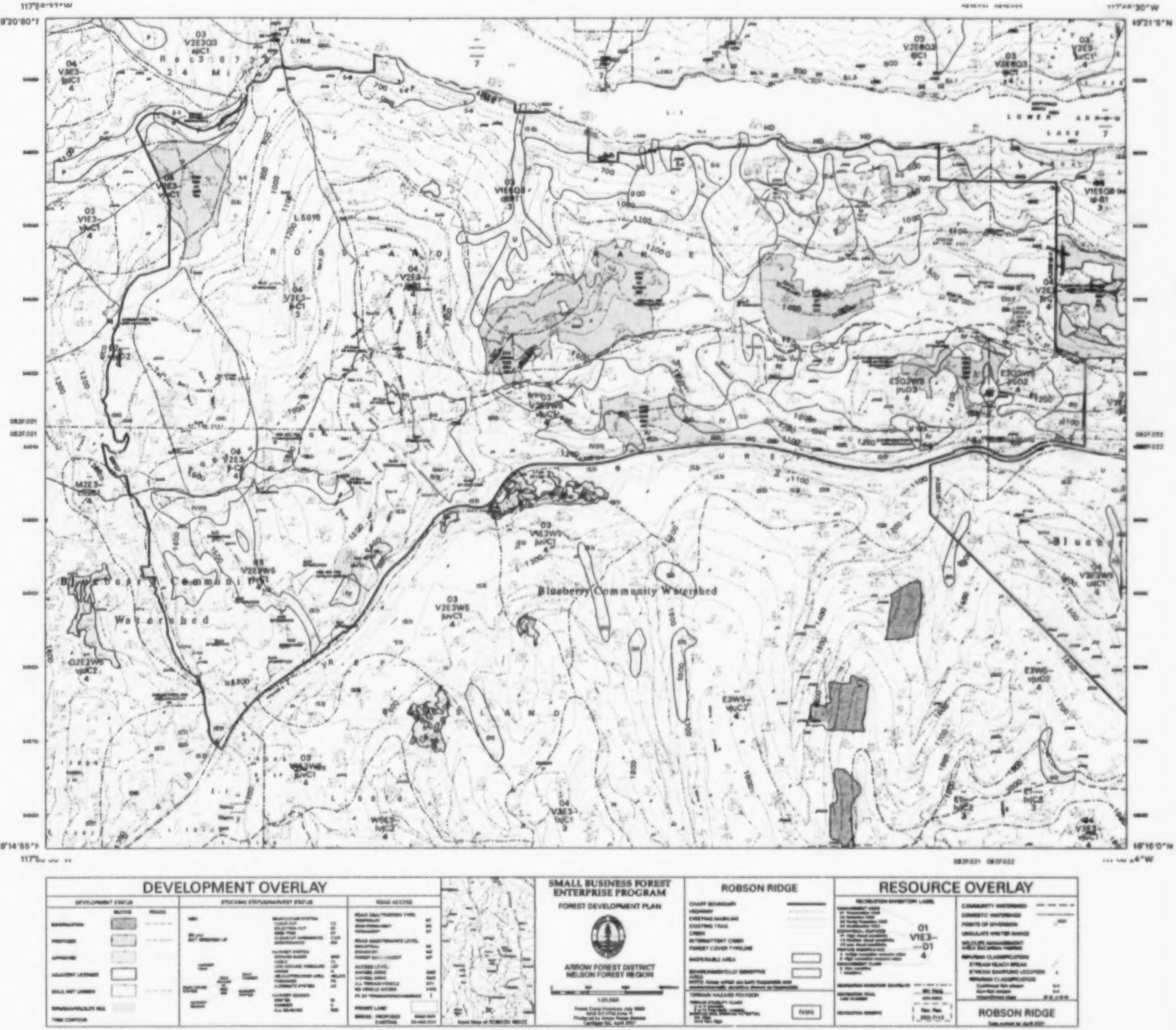
PAYNE CREEK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FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
ROBSON RIDGE
RESOURCE OVERLAY
ROBSON RIDGE
Blueberry Community Watershed
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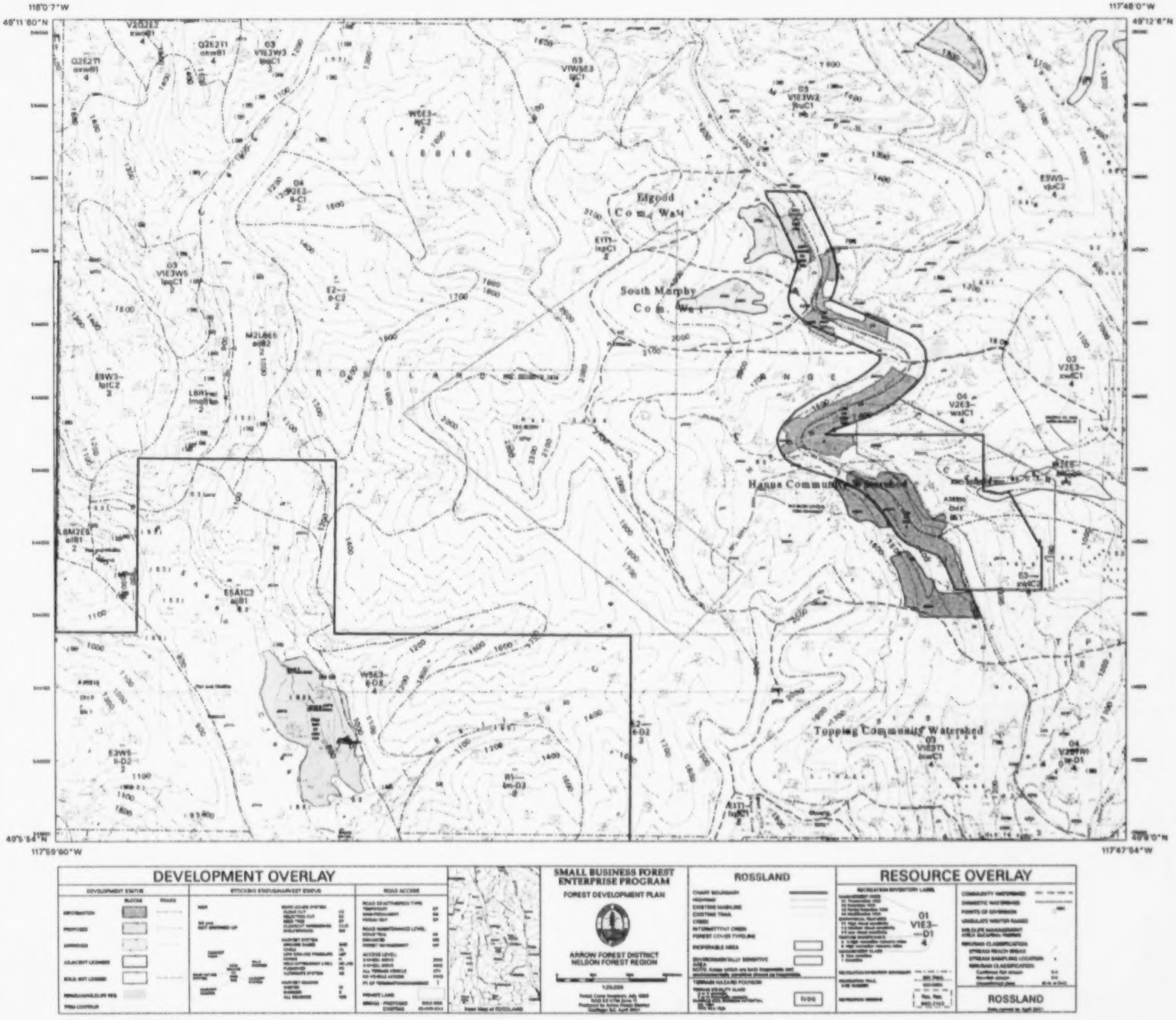
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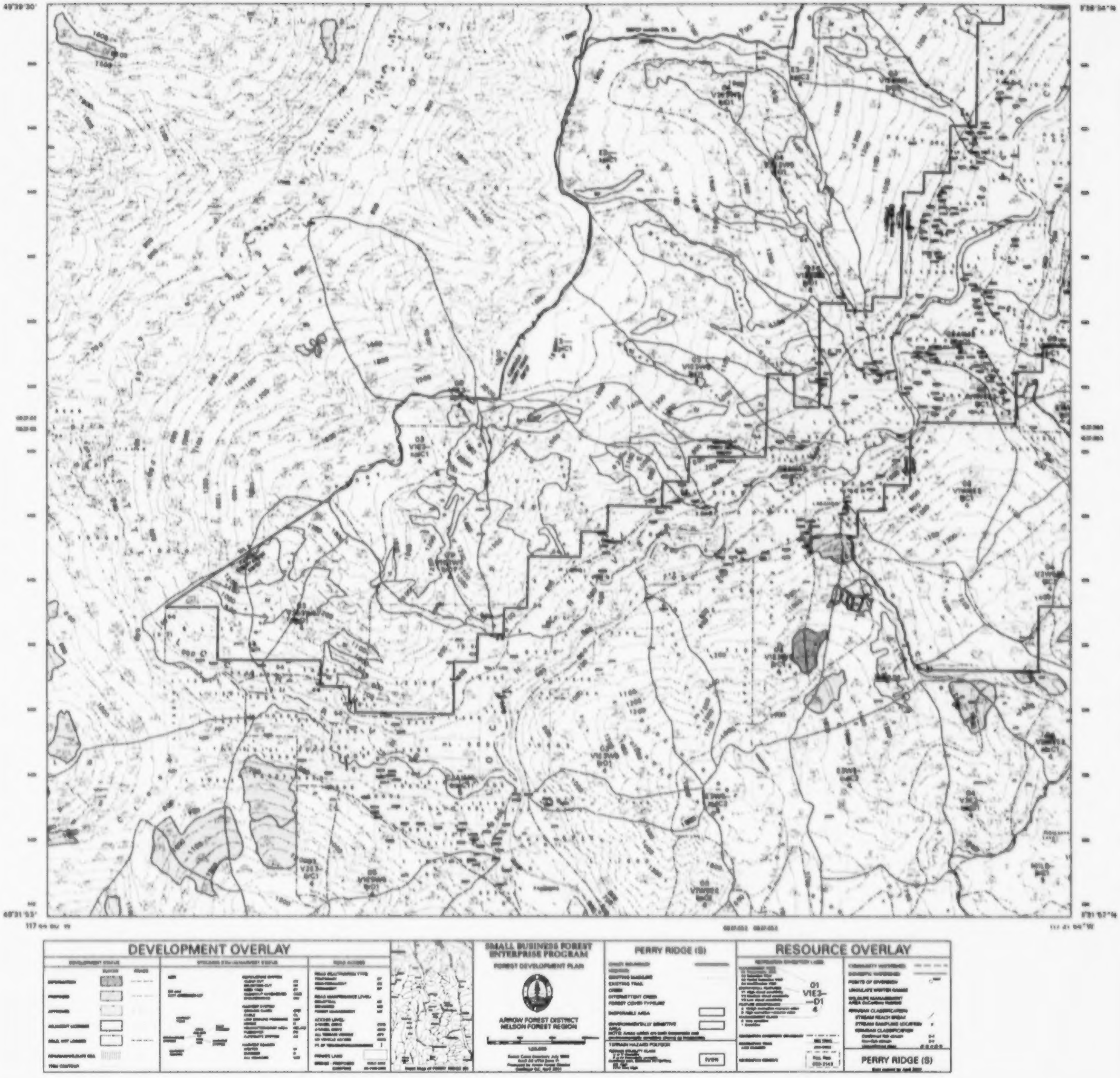
Elgood Com. Wat
South Murphy Com. Wat
Hanna Community Watershed
Topping Community Watershed
ROSSLAND RANGE
DEVELOPMENT OVERLAY
SMALL BUSINESS FOREST ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
1:20,000
ROSSLAND
RESOURCE OVERLAY
01
V1E3—
—D1
4
ROSSLAND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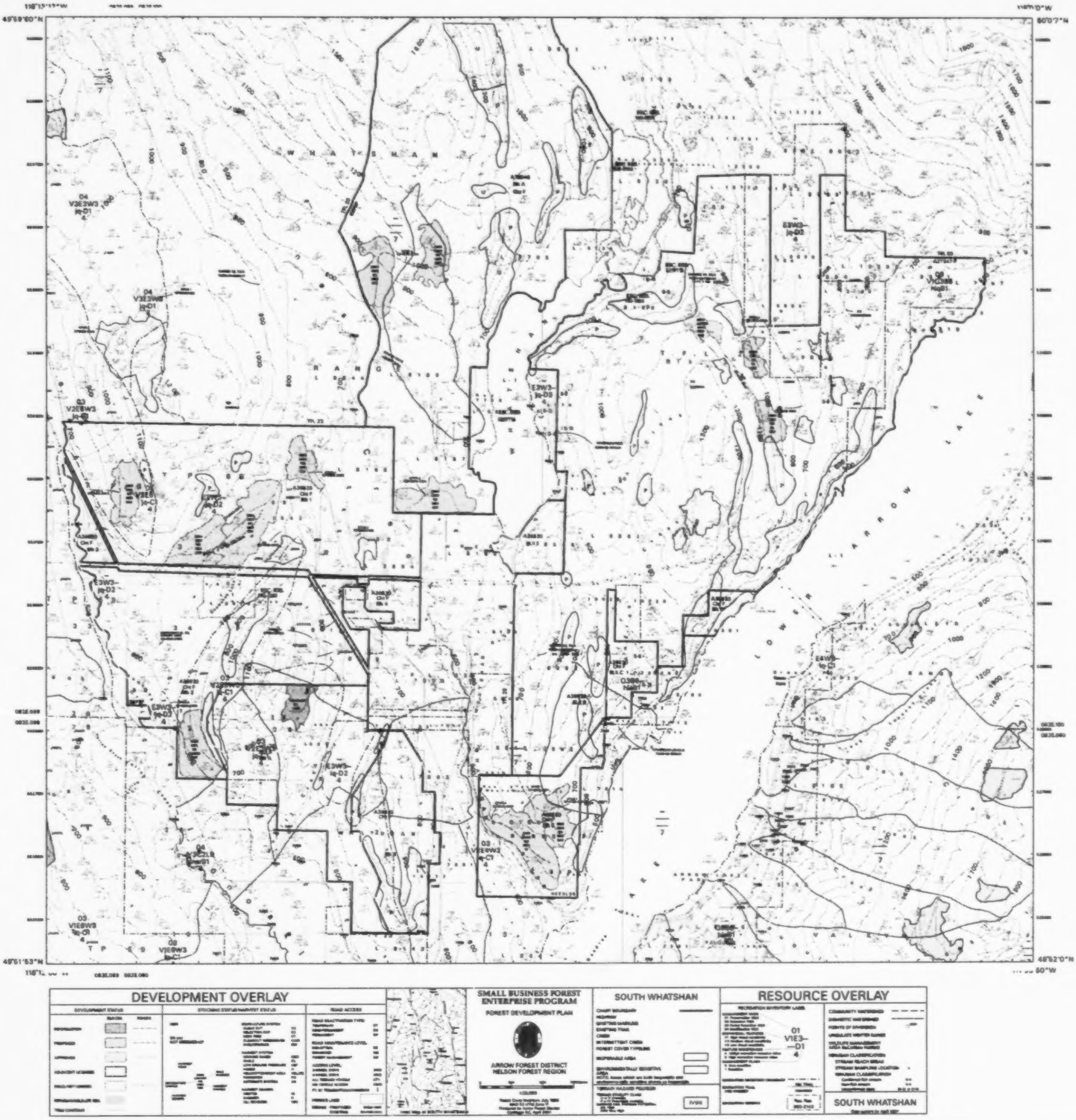
117°31'59"W
49°31'53'
DEVELOPMENT OVERLAY
SMALL BUSINESS FOREST ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
PERRY RIDGE (S)
EXISTING TRAIL
CREEK
INTERMITTENT CREEK
FOREST COVER TYPELINE
INOPERABLE AREA
ENVIRONMENTALLY SENSITIVE AREA
TERRAIN HAZARD POLYGON
RESOURCE OVERLAY
01
VIE3
D1
4
PERRY RIDGE (S)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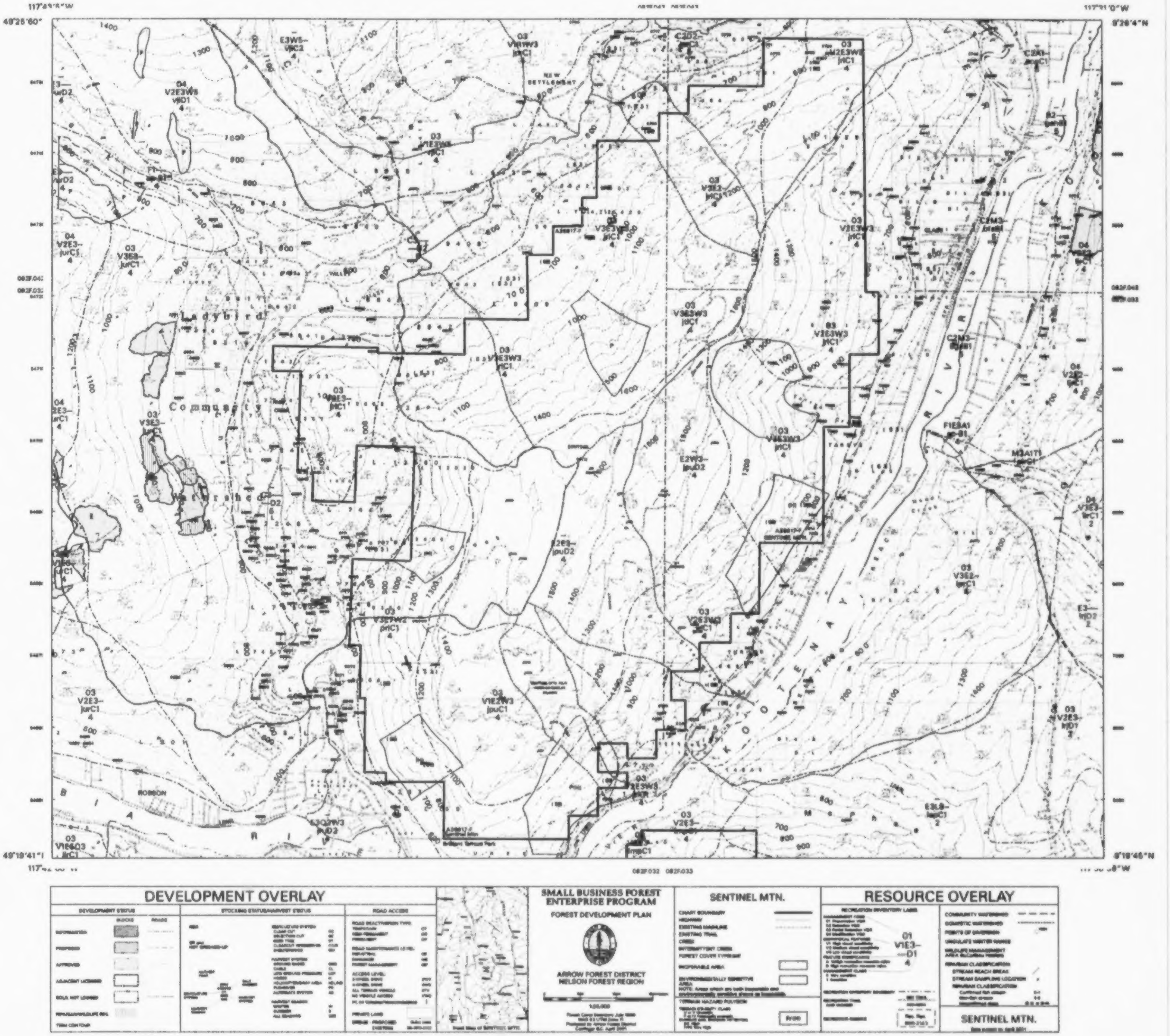
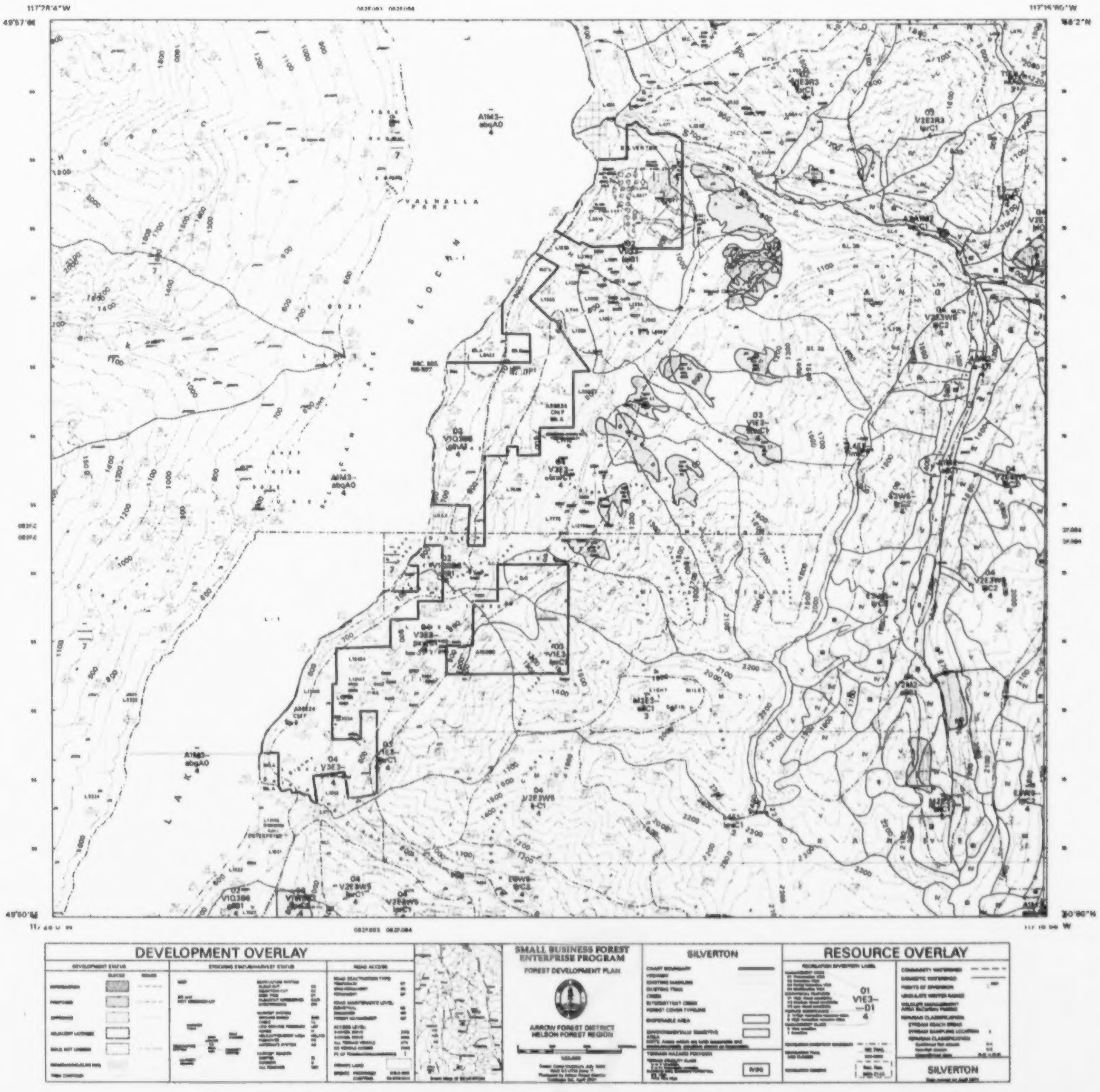
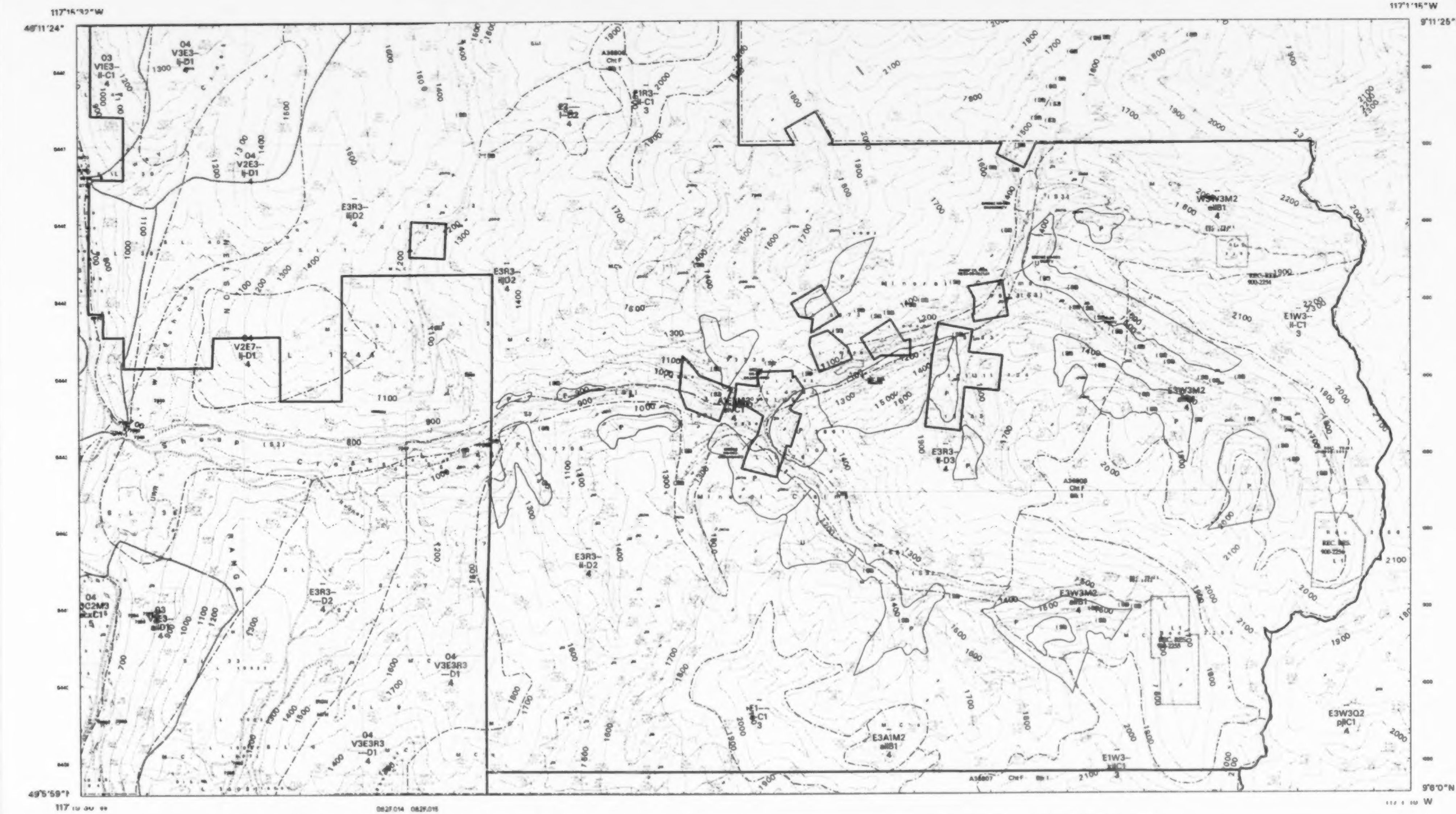
49°59'60"N
50°0'7"N
49°51'53"N
49°52'0"N
L O W E R   A R R O W   L A K E
04
V3E3W3
H-D1
4
E3W3-
H-D2
4
01
V1E3—
—D1
4
DEVELOPMENT OVERLAY
DEVELOPMENT STATUS
STOCKING STATUS/HARVEST STATUS
ROAD ACCESS
SMALL BUSINESS FOREST
ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
SOUTH WHATSHAN
RESOURCE OVERLAY
SOUTH WHATSHAN


DEVELOPMENT OVERLAY
SMALL BUSINESS FOREST
ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
SENTINEL MTN.
RESOURCE OVERLAY
01
V1E3—
—D1
4
SENTINEL MTN.
082F.032 082F.033
082F.042 082F.043
117°43'5"W
117°31'0"W
49°25'60"
49°19'41"
KOOTENAY RIVER
Ladybird Community Watershed
ROBSON
NEW SETTLEMENT

117°28'4"W
117°15'60"W
49°57'06
49°50'06
VALHALLA PARK
SLOCAN LAKE
SILVERTON
082F.083 082F.084
DEVELOPMENT OVERLAY
SMALL BUSINESS FOREST ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
SILVERTON
RESOURCE OVERLAY
01
V1E3—
—D1
4
SILVERTON


117°16'32"W
117°1'15"W
49°11'24"
9°11'25"N
49°5'59"N
9°6'0"N
W
Sheep Creek
RANGE
Mineral
A36808
Cht F
A36807
Cht F
Bk 1
REC. RES.
900-2258
E3R3–
iiiD2
4
E3R3–
ii-D3
4
E3W3M2
aiiB1
4
E1W3–
ii-C1
3
V2E7–
ii-D1
4
04
V2E3–
ii-D1
4
04
V3E3–
ii-D1
03
V1E3–
ii-C1
4
E3A1M2
aiiB1
4
E3W3Q2
piiC1
4
04
V3E3R3
–D1
4
E3R3–
–D2
4
E1R3–
ii-C1
3
082F.014 082F.015

DEVELOPMENT OVERLAY

DEVELOPMENT STATUS

STOCKING STATUS/HARVEST STATUS

ROAD ACCESS

PRIVATE LAND

082F.014 082F.015

Inset Map of SHEEP CREEK

SMALL BUSINESS FOREST ENTERPRISE PROGRAM

FOREST DEVELOPMENT PLAN

ARROW FOREST DISTRICT
NELSON FOREST REGION

1:20,000

SHEEP CREEK

CHART BOUNDARY
HIGHWAY
EXISTING MAINLINE
EXISTING TRAIL
CREEK
INTERMITTENT CREEK
FOREST COVER TYPELINE
INOPERABLE AREA
ENVIRONMENTALLY SENSITIVE AREA
TERRAIN HAZARD POLYGON
IV(H)

RESOURCE OVERLAY

RECREATION INVENTORY LABEL

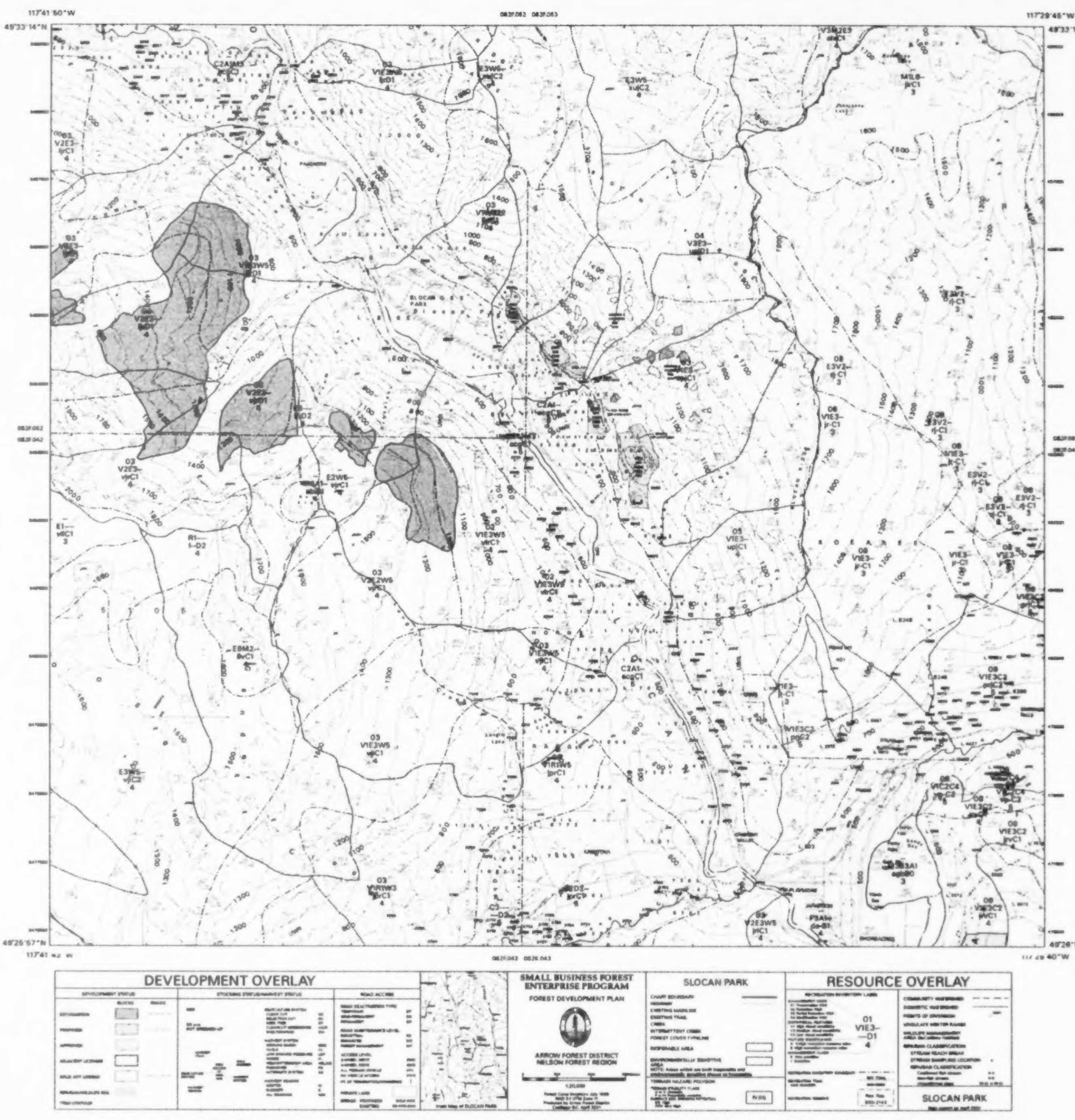
01
V1E3--
---D1
4

REC. TRAIL

Rec. Res.
900-2143

COMMUNITY WATERSHED
DOMESTIC WATERSHED
POINTS OF DIVERSION
UNGULATE WINTER RANGE
WILDLIFE MANAGEMENT AREA
RIPARIAN CLASSIFICATION
STREAM REACH BREAK
STREAM SAMPLING LOCATION
RIPARIAN CLASSIFICATION

SHEEP CREEK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117°29'46"W
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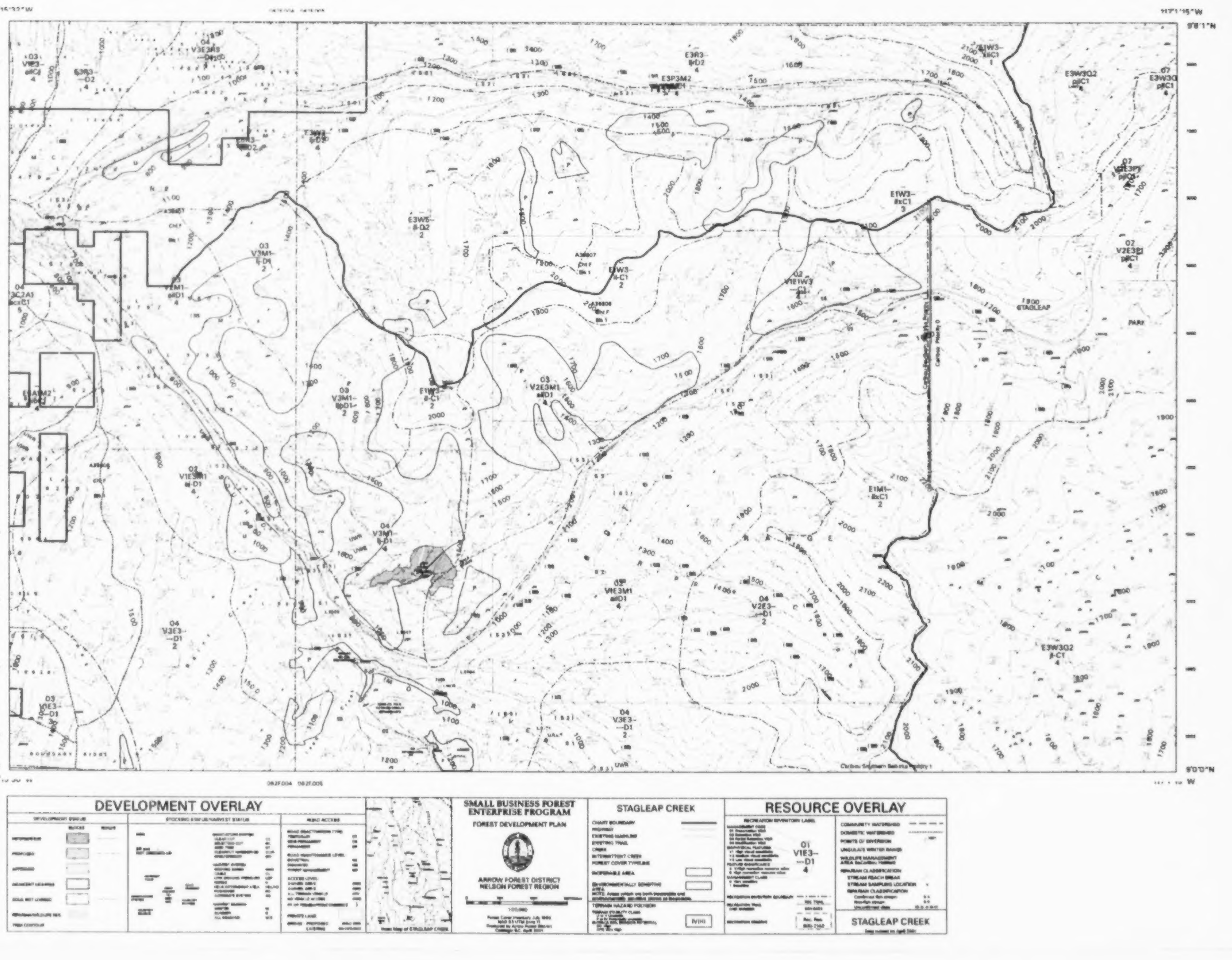
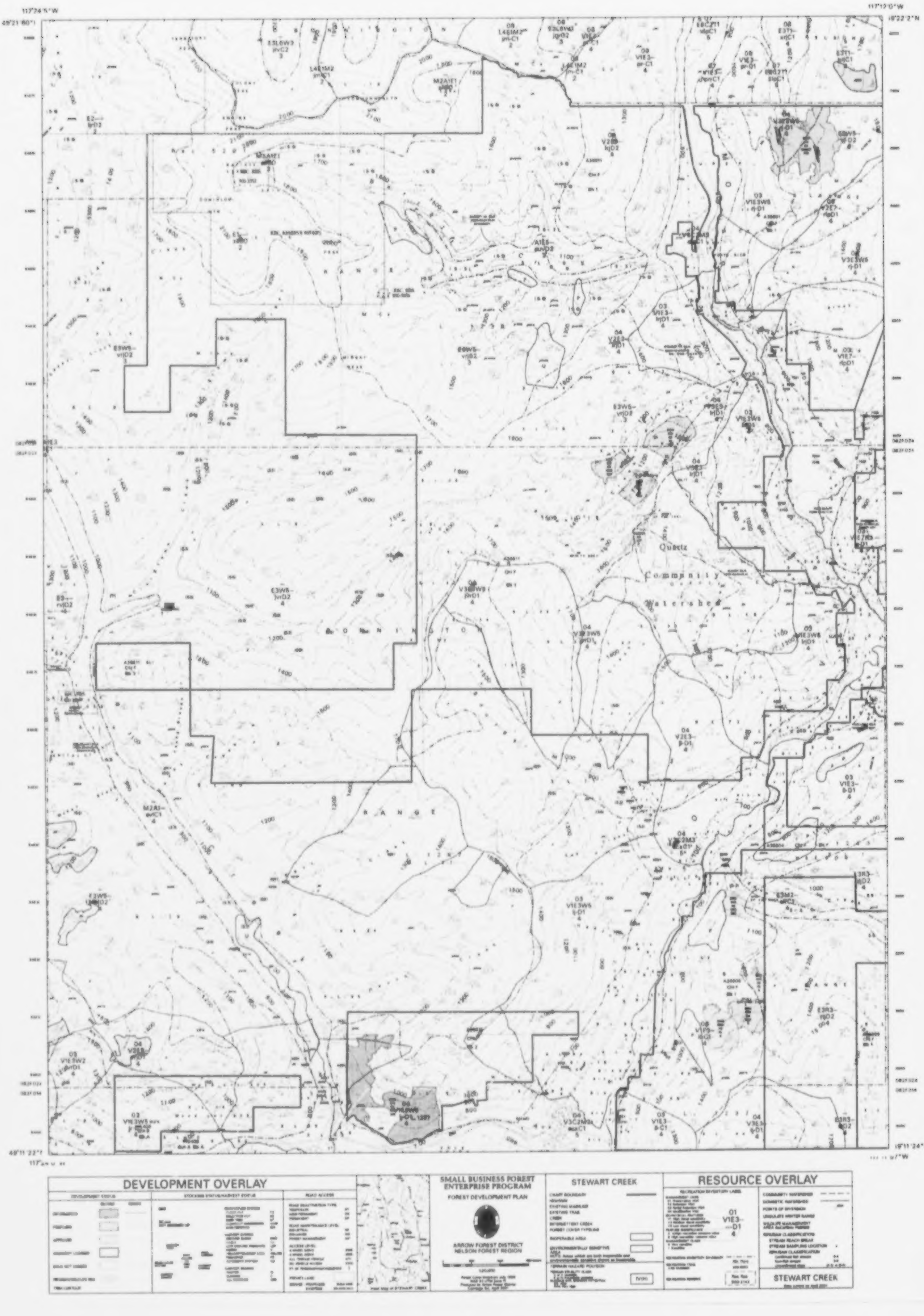
49°25'57"N
117°41'42"W
49°26'1"N
117°29'40"W
082F.052 082F.053
082F.042 082F.043
DEVELOPMENT OVERLAY
SMALL BUSINESS FOREST ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
1:20,000
SLOCAN PARK
RESOURCE OVERLAY
01
V1E3-
—D1
4
SLOCAN PARK


117°15'33"W
49°6'0"N
117°1'15"W
9°6'1"N
48°59'59"
9°0'0"N
082F.004 082F.005
STAGLEAP
PARK
DEVELOPMENT OVERLAY
SMALL BUSINESS FOREST ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
1:20,000
STAGLEAP CREEK
RESOURCE OVERLAY
01
V1E3-
—D1
4
STAGLEAP CREEK

117°24'5"W
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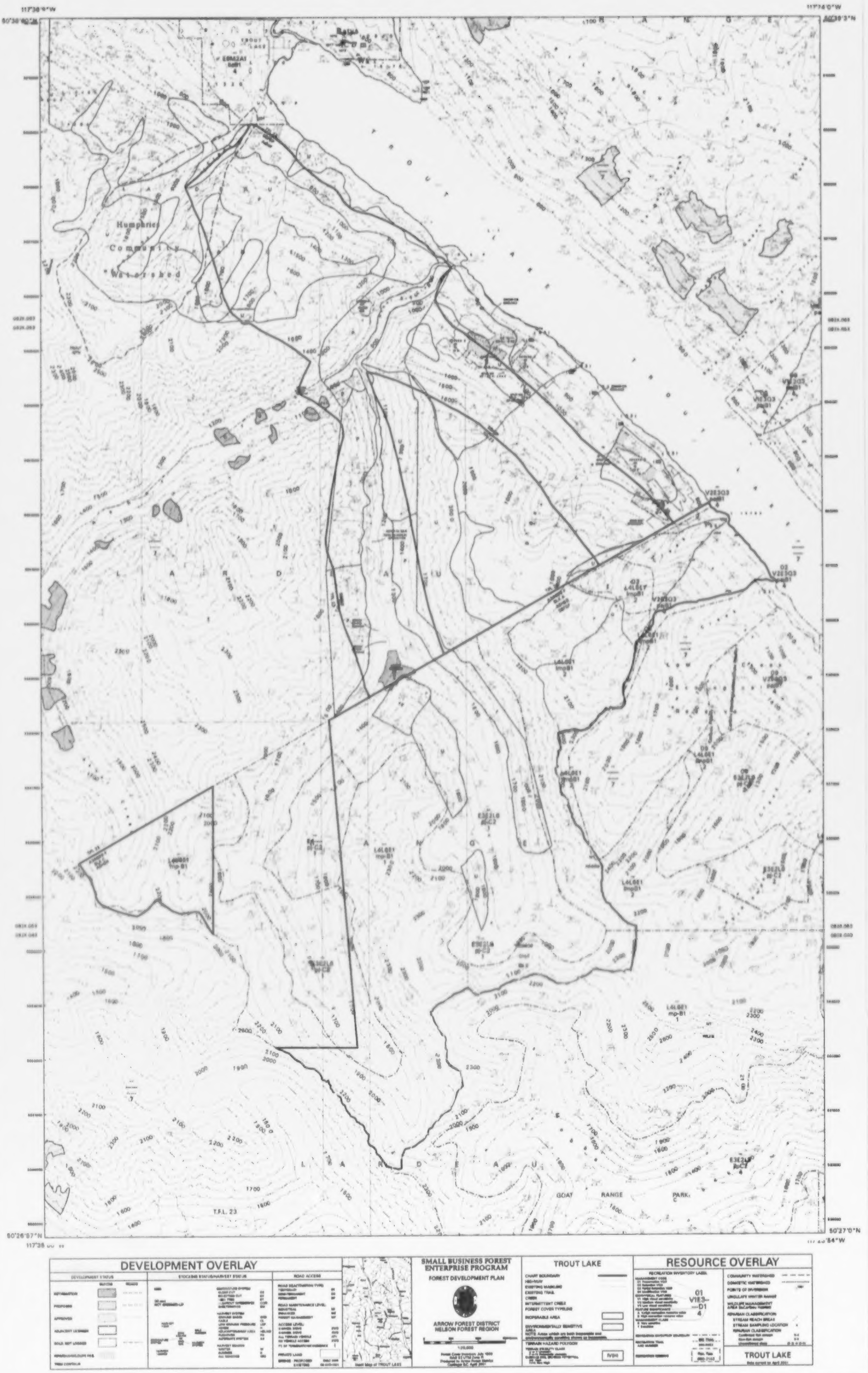
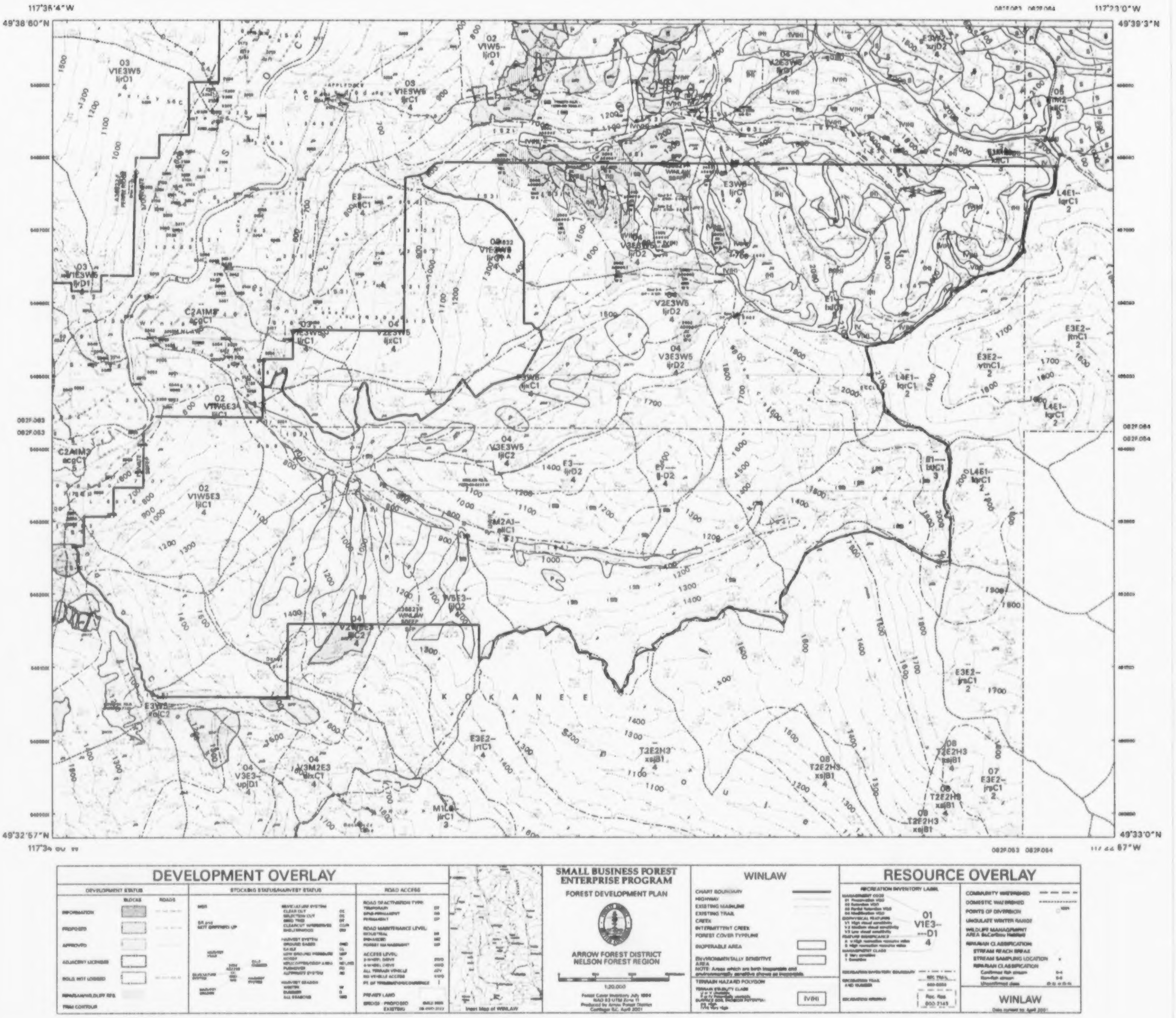
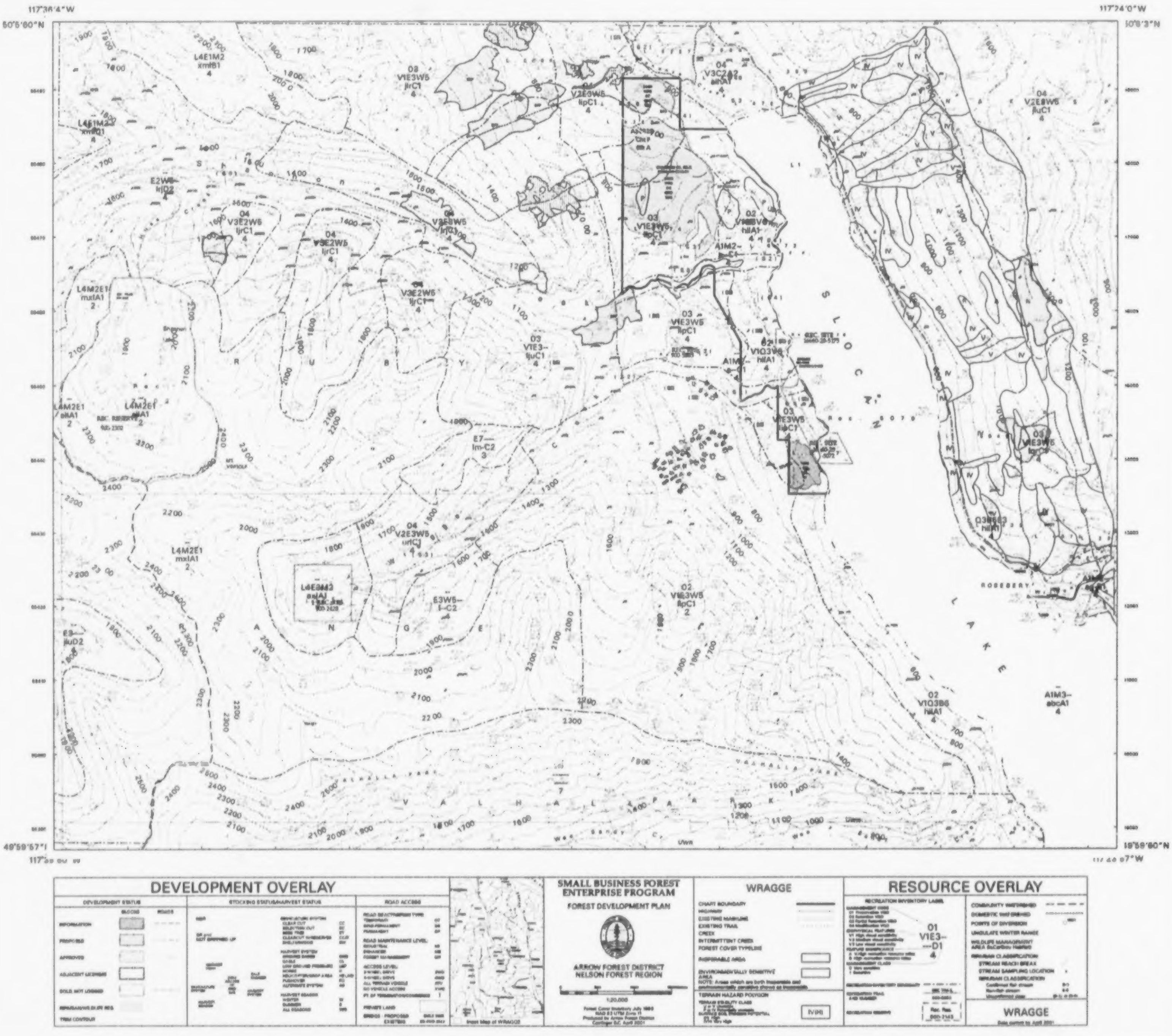
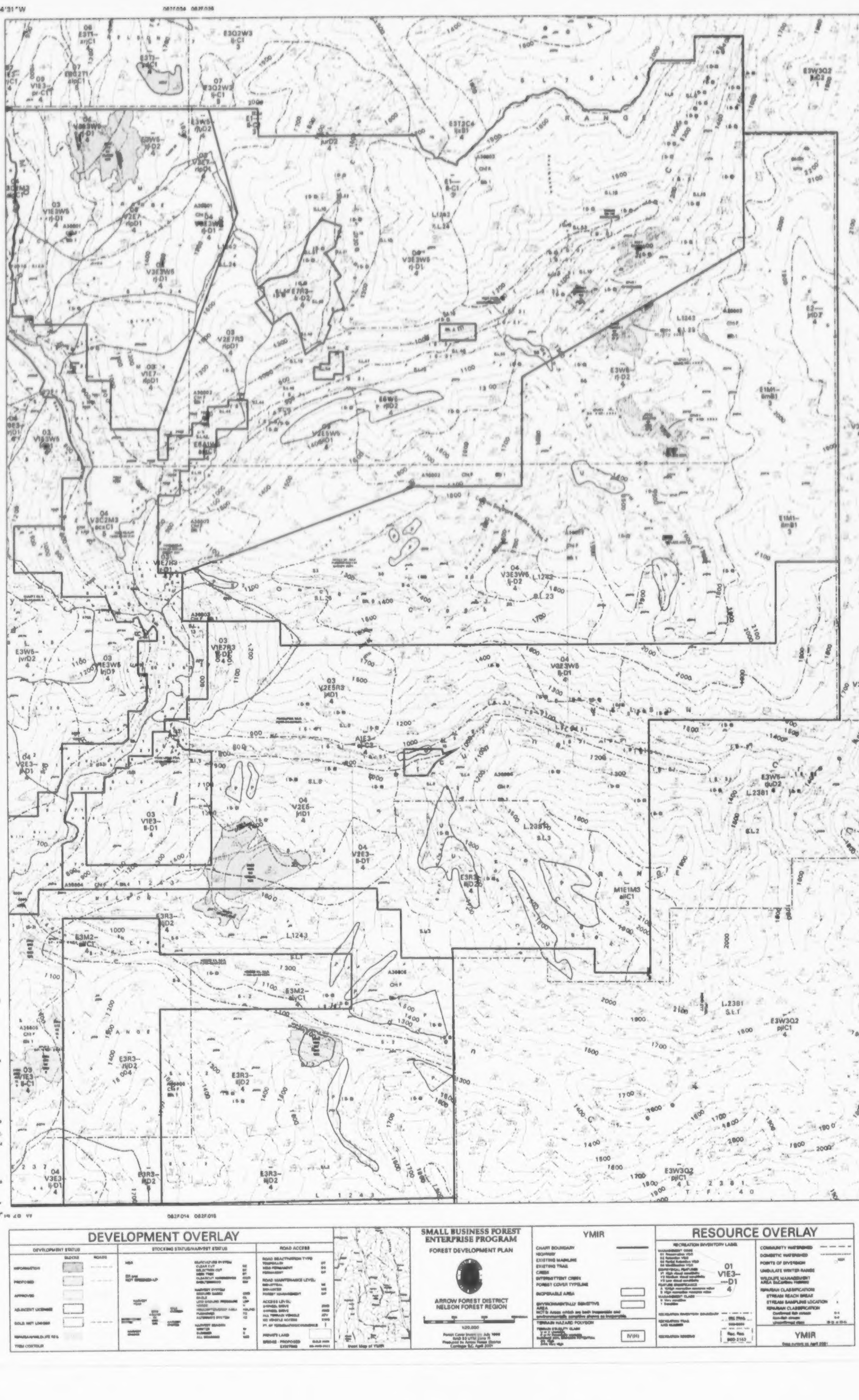
49°21'60"N
49°22'2"N
49°11'22"N
49°11'24"N
Quartz
Community
Watershed
RANGE
DEVELOPMENT OVERLAY
SMALL BUSINESS FOREST
ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
STEWART CREEK
RESOURCE OVERLAY
01
V1E3-
-D1
4
STEWART CREEK


117°38'0"W
117°24'0"W
50°38'3"N
50°26'57"N
50°27'0"N
TROUT LAKE
Community
Watershed
T.F.L. 23
GOAT RANGE PARK
V2E3O3
L4L0E1
E3E2L6
DEVELOPMENT OVERLAY
DEVELOPMENT STATUS
STOCKING STATUS/HARVEST STATUS
ROAD ACCESS
SMALL BUSINESS FOREST ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
1:20,000
TROUT LAKE
CHART BOUNDARY
FOREST COVER TYPELINE
INOPERABLE AREA
ENVIRONMENTALLY SENSITIVE AREA
TERRAIN HAZARD POLYGON
RESOURCE OVERLAY
RECREATION INVENTORY LABEL
01
VIE3
D1
4
COMMUNITY WATERSHED
DOMESTIC WATERSHED
POINTS OF DIVERSION
UNGULATE WINTER RANGE
RIPARIAN CLASSIFICATION
STREAM REACH BREAK
STREAM SAMPLING LOCATION
TROUT LAKE


117°38'4"W
117°23'0"W
49°38'60"N
49°39'3"N
49°32'57"N
49°33'0"N
082F.063
082F.064
K O K A N E E
DEVELOPMENT OVERLAY
DEVELOPMENT STATUS
STOCKING STATUS/HARVEST STATUS
ROAD ACCESS
Inset Map of WINLAW
SMALL BUSINESS FOREST ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
1:20,000
WINLAW
CHART BOUNDARY
HIGHWAY
EXISTING MAINLINE
EXISTING TRAIL
CREEK
INTERMITTENT CREEK
FOREST COVER TYPELINE
INOPERABLE AREA
ENVIRONMENTALLY SENSITIVE AREA
TERRAIN HAZARD POLYGON
IV(H)
RESOURCE OVERLAY
RECREATION INVENTORY LABEL
01
V1E3–
–D1
4
COMMUNITY WATERSHED
DOMESTIC WATERSHED
POINTS OF DIVERSION
UNGULATE WINTER RANGE
WILDLIFE MANAGEMENT AREA
RIPARIAN CLASSIFICATION
STREAM REACH BREAK
STREAM SAMPLING LOCATION
WINLAW


DEVELOPMENT OVERLAY
SMALL BUSINESS FOREST ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
1:20,000
WRAGGE
RESOURCE OVERLAY
01
V1E3—
—D1
4
WRAGGE
117°36'4"W
117°24'0"W
50°5'60"N
50°6'3"N
49°59'57"N
49°59'60"N
S L O C A N
L A K E
ROSEBERY
V A L H A L L A P A R K
03
V1E3W5
llpC1
4
02
V1E3W5
llpC1
2
L4M2E1
mxlA1
2
E7
lm-C2
3
A1M3—
abcA1
4


DEVELOPMENT OVERLAY
SMALL BUSINESS FOREST ENTERPRISE PROGRAM
FOREST DEVELOPMENT PLAN
ARROW FOREST DISTRICT
NELSON FOREST REGION
1:20,000
YMIR
CHART BOUNDARY
HIGHWAY
EXISTING MAINLINE
EXISTING TRAIL
CREEK
INTERMITTENT CREEK
FOREST COVER TYPELINE
INOPERABLE AREA
ENVIRONMENTALLY SENSITIVE AREA
TERRAIN HAZARD POLYGON
IV(H)
RESOURCE OVERLAY
RECREATION INVENTORY LABEL
01
V1E3--
--D1
4
COMMUNITY WATERSHED
DOMESTIC WATERSHED
POINTS OF DIVERSION
UNGULATE WINTER RANGE
RIPARIAN CLASSIFICATION
STREAM REACH BREAK
STREAM SAMPLING LOCATION
Rec. Res
800-3143
YMIR
117°14'31"W
117°2'29"W
49°21'00"
9°22'1"N
49°11'23"
9°11'24"N
082F.024
082F.025
082F.014
082F.015
L.1243
L.2381
L.1242
E3W3Q2
V3W3A1
E1M1-
M1E1M3

Appendix N

Approvals and Amendments to Forest Development Plans

Contents:

Amendment #6
Emergency Amendment #8 – Mud Lake
Amendment #9
Amendment #11
Amendment #14
Amendment #15
Amendment #16

BRITISH
COLUMBIA

File: 10765-25 2001 BCTS Forest Development Plan: Arrow District

June 10, 2003

Mr. Brian Simpson,
District Manager,
Arrow-Boundary Forest District,
845 Columbia Avenue,
Castlegar, BC.
V1N 1H3.

Dear Mr. Simpson:

Re: Amendment #6 of the 2001 Forest Development Plan

BC Timber Sales, Kootenay Business Area request that our approved Forest Development Plan covering Arrow Forest District, for the term of April 1, 2001 to March 31, 2006, be amended to include the mutually agreed upon District stocking standard guidelines. These guidelines are attached.

FOREST SERVICE
BRITISH COLUMBIA

Please consider this request as amendment number 6.

Submitted for Approval by:	**Approval:**
Signature or RPF:	**Signature of District Manager:**
Jim Annunziello RPF	**Brian Simpson**
Date	**Date:**

Ministry of Forests
BC Timber Sales
Kootenay Business Area, Nelson
1907 Ridgewood Rd
Nelson, British Columbia
V1L 6K1
Tel: (250) 825-1100
Fax: (250) 825-9657

The following worksheets are included with this workbook (see tabs at the bottom of the screen):

Text -Additional standards, and instructions on using some Excel features associated with the guide.

DAR - Stocking standards for the Arrow Forest District.

Sgl Tree Sel'n - Stocking standards for the Arrow Forest District - single tree selection silvicultural system

Intermediate - Standards for the Arrow Forest District - Intermediate Cut, no regeneration objectives

Footnotes - contains definitions and footnotes for the stocking standards.

Additional Standards

Maximum Density (all areas)

Max (sph) - 10,000
Post Spacing (sph): Min=700, Max=1800 except Pl where Max=2500

Reductions in stocking standards

Reductions in target/minimum stocking levels will be considered as separate amendments to the forest development plan on a site specific basis.

Minimum Inter-tree Distance

Trees must be the greater than or equal to the approved minimum inter-tree distance apart in order to be well spaced:

Minimum inter-tree distance (m)	Location/condition
2.00	normal standard
1.70	to facilitate selection of superior planting microsites when sites have well dispersed occurrence of standing water, well dispersed bedrock outcrops, mechanically mounded sites, **untreatable slash** or failed plantations.
1.50	in extreme situations described above.

Completion of Plantability surveys is optional to provide justification for reducing MITD

Height of Trees Relative to Competing Vegetation

In addition to being at least the required minimum height, tree height must be greater than the following % relative to competing vegetation within a one metre radius of the trunk:

% Ht above competing veg.	Location/condition

125%	ESSF IDF BGC zones
150%	all other BGC zones

Note: Free growing status will be evaluated using the MOF procedures in place at the time of assessment. Current procedures are defined in Appendix 9 of the Establishment to Free Growing Guidebook: Nelson Region, May 2000

Minimum Leave Tree Characteristics: Advanced Regeneration:

Advanced regeneration must meet the requirements of Appendix 10 of the Establishment to Free Growing Guidebook: Nelson Region, May 2000 to be acceptable.

Dispersed Strata (Mosaic of site series)

Some areas will have more than one distinctly different site series occurring in a mosaic in which individual site series are either too small or too intricately dispersed to map separately. These areas should be mapped as a complex, with a label indicating the relative proportion of each site series, e.g. an area with 80% mesic sites, 10% dry sites, and 10% wet sites might be labelled 01_8 02_1 06_1.

If describing the mosaic as one standards unit, the predominant site series will be used as the ecology label. Stocking standards for the predominant site series will be applied to the entire area.

If describing the mosaic as distinct identifiable ecostrata then different standards units and different stocking standards may be established.

Reducing the Early Free Growing Time Frame

Early free growing window may be reduced to a minimum of 5 years from establishment in the ICH and eight years from establishment in the ESSF zones where neither potential expression of forest health agents or the development of competing vegetation is a concern.

ESSFwc1/ICHmw2 Transition Sites

Where it is not practical to separate a transitional site into ESSF and ICH standards units the following shall apply:

From Table A stocking standards:

Preferred species shall be based on the ESSF standards.
Acceptable species shall be a combination of the ICH standards (preferred species) and the ESSF standards (acceptable species). NOTE "Transition" on SP.
Stocking, Regen Delay and Free Growing requirements shall be based on the ESSF standards.

Seed or Vegetative Material Transfer

All variances will require District Manager approval per standing policy and procedure.

WORKSHEET FEATURES

Using the Macro Buttons on the Worksheet

Each regional worksheet has four macro buttons in the upper left-hand corner. Clicking on a button will initiate the following:

Show P/S/T - shows all columns of the worksheet, particularly the Primary, Secondary and Tertiary columns.
Show P/A - shows only the Preferred and Acceptable species columns (i.e. hides the PST columns).
Clicking on either of the above buttons will result in the same column display on all regional worksheets. The worksheets will all display the upper left-hand corner of the worksheet.

Print P/S/T - prints the P/S/T view of the current regional worksheet in landscape orientation.
Print P/A - prints the P/A view of the current regional worksheet in portrait orientation.

Please note: if the Macros are enabled and one of the above buttons is used, column C and D will be reformatted to narrow width. To view/print the columns column width for column C must be manually re-formatted.

Reference Guide for FDP Stocking Standards**

Classification			Regeneration									Free Growing			
			Species					Stocking(i)			Regen Delay			Min. Height(ii)	
			Conifer					Target	MIN pa	MIN p		Earliest	Latest	Species	Ht
Zone/SZ	Series		Primary	Preferred (p)	Secondary	Acceptable (a)	Tertiary	(well-spaced/ha)			(Max yrs)	(yrs)	(yrs)		(m)
ESSFdc1	01	1071	Bl Se	Sx Pl	Pl[34]	Bl	Cw[9,32] Hw[9,32]	1200	700	600	4	12	20	Pl Others	1.6 0.8
	02	1072	Pl Se	Pl	Bl	Sx	Cw[55] Pa	1000	500	400	7	15	20	Pl Others	1.2 0.6
	03	1073	Bl Se	Pl		Sx	Cw[9,32] Hw[9,32] Pl[34]	1000	500	400	7	15	20	Pl Others	1.2 0.6
	04	1074	Bl[1,32] Se[1,32]	Pl Sx	Pl[1,34]	Bl	Hw[32]	1200	700	600	4	12	20	Pl Others	1.6 0.8
	05	1075	non-forested	Pl Sx		Bl		1000	500	400	7	15	20	Pl Others	1.2 0.6
	06	1076		Pl Sx		Bl		1000	500	400	7	15	20	Pl Others	1.2 0.6
	07	1077		non-forested				-	-	-	-	-	-	-	-
ESSFwc1	01	1001	Bl Se	Bl Se Pl[72]	Pl[34]	Cw Hw	Cw[9,32] Hw[9,32]	1200	700	600	4	12	20	Pl Others	1.6 0.8
	02	1002	Pl Se	Pl Se Bl	Bl	Cw Hw	Cw[55] Pa	1000	500	400	7	15	20	Pl Others	1.2 0.6
	03	1003	Bl Se	Bl Se Pl[72]		Cw Hw	Cw[9,32] Hw[9,32] Pl[34]	1200	700	600	4	12	20	Pl Others	1.6 0.8
	04	1004	Bl[1,32] Se[1,32]	Bl Se Pl[72]	Pl[1,34]	Cw Hw	Hw[32]	1200	700	600	7	15	20	Pl Others	1.6 0.8
	05	1005	non-forested	non-forested				-	-	-	-	-	-	-	-
ESSFwc4	01	1011	Bl Se	Bl Se Pl[72]	Pl[34]			1200	700	600	4	12	20	Pl Others	1.6 0.8
	02	1012	Se	Se Pl Bl	Pl[34]		Bl[54] Pa	1000	500	400	7	15	20	Pl Others	1.2 0.6
	03	1013	Se	Se Bl Pl	Bl Pl[34]			1000	500	400	7	15	20	Pl Others	1.2 0.6
	04	1014	Se	Se Bl Pl[72]	Bl Pl[34]			1200	700	600	4	12	20	Pl Others	1.6 0.8
	05	1015	Bl Se	Bl Se Pl[72]				1200	700	600	4	12	20	Pl Others	1.6 0.8
	06	1016	Bl[1,32] Se[1,32]	Bl Se Pl[72]				1200	700	600	4	12	20	Pl Others	1.6 0.8
	07	1017	Se[1]	Se Bl Pl[72]	Bl[1] Pl[1,34]			1000	500	400	4	12	20	Pl Others	1.2 0.6
	08	1018	non-forested	non-forested				-	-	-	-	-	-	-	-
ICHdw	1a	1021	Fd Pl	Fd[58] Lw Pl[71] Py Cw[42]	Cw Pw[31,49] Sx	Bl[10,13] Bg Pw[57] Hw Sx	Bl Hw Lw[23]	1200	700	600	7	12	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0
	01b	1022	Fd	Fd[58] Lw Pl Py Cw Bg[58]	Pl[49] Pw[31,49]	Sx Hw Pw[57] Bl[10,13]	Bl[28] Cw[28] Hw[28] Lw[23] Sx[28]	1200	700	600	7	12	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0
	02	1023	Fd Pl	Fd[58] Lw Pl[71] Py	Bl[28] Pw[31,49] Sx[10,13,28]	Cw Hw Pw[57]	Cw[28] Hw[28] Lw[23]	1000	500	400	7	12	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0
	03	1024	Fd Pl	Fd[58] Lw Bg[58] Cw Sx	Pw[31,49]	Pl Pw[57] Hw Bl[10,13]	Bl[28] Cw[28] Hw[28] Lw[23] Pa Sx[28]	1200	700	600	4	9	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0
	04	1025	Cw[32] Fd[1,32] Hw[32] Sx	Fd[58] Lw Bg[58] Cw Hw Sx	Bl Pl Pw[1,32,49]	Pl Bl[10,13] Pw[57]		1200	700	600	4	9	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0

1,2 etc - see "Footnotes"

*Avoid logging

** Additional information or requirements may be contained in the text portion of the reference guide

Reference Guide for FDP Stocking Standards**

Classification			Regeneration									Free Growing			
			Species					Stocking(I)			Regen Delay			Min. Height(I)	
			Conifer					Target	MIN pa	MIN p		Earliest	Latest	Species	Ht
Zone/SZ	Series		Primary	Preferred (p)	Secondary	Acceptable (a)	Tertiary	(well-spaced/ha)			(Max yrs)	(yrs)	(yrs)		(m)
ESSFdc1	01	1071	Bl Se	Sx Pl	Pl[34]	Bl	Cw[9,32] Hw[9,32]	1200	700	600	4	12	20	Pl Others	1.6 0.8
	02	1072	Pl Se	Pl	Bl	Sx	Cw[55] Pa	1000	500	400	7	15	20	Pl Others	1.2 0.6
	03	1073	Bl Se	Pl		Sx	Cw[9,32] Hw[9,32] Pl[34]	1000	500	400	7	15	20	Pl Others	1.2 0.6
	04	1074	Bl[1,32] Se[1,32]	Pl Sx	Pl[1,34]	Bl	Hw[32]	1200	700	600	4	12	20	Pl Others	1.6 0.8
	05	1075	non-forested	Pl Sx		Bl		1000	500	400	7	15	20	Pl Others	1.2 0.6
	06	1076		Pl Sx		Bl		1000	500	400	7	15	20	Pl Others	1.2 0.6
	07	1077		non-forested				-	-	-	-	-	-	-	-
ESSFwc1	01	1001	Bl Se	Bl Se Pl[72]	Pl[34]	Cw Hw	Cw[9,32] Hw[9,32]	1200	700	600	4	12	20	Pl Others	1.6 0.8
	02	1002	Pl Se	Pl Se Bl	Bl	Cw Hw	Cw[55] Pa	1000	500	400	7	15	20	Pl Others	1.2 0.6
	03	1003	Bl Se	Bl Se Pl[72]		Cw Hw	Cw[9,32] Hw[9,32] Pl[34]	1200	700	600	4	12	20	Pl Others	1.6 0.8
	04	1004	Bl[1,32] Se[1,32]	Bl Se Pl[72]	Pl[1,34]	Cw Hw	Hw[32]	1200	700	600	7	15	20	Pl Others	1.6 0.8
	05	1005	non-forested	non-forested				-	-	-	-	-	-	-	-
ESSFwc4	01	1011	Bl Se	Bl Se Pl[72]	Pl[34]			1200	700	600	4	12	20	Pl Others	1.6 0.8
	02	1012	Se	Se Pl Bl	Pl[34]		Bl[54] Pa	1000	500	400	7	15	20	Pl Others	1.2 0.6
	03	1013	Se	Se Bl Pl	Bl Pl[34]			1000	500	400	7	15	20	Pl Others	1.2 0.6
	04	1014	Se	Se Bl Pl[72]	Bl Pl[34]			1200	700	600	4	12	20	Pl Others	1.6 0.8
	05	1015	Bl Se	Bl Se Pl[72]				1200	700	600	4	12	20	Pl Others	1.6 0.8
	06	1016	Bl[1,32] Se[1,32]	Bl Se Pl[72]				1200	700	600	4	12	20	Pl Others	1.6 0.8
	07	1017	Se[1]	Se Bl Pl[72]	Bl[1] Pl[1,34]			1000	500	400	4	12	20	Pl Others	1.2 0.6
	08	1018	non-forested	non-forested				-	-	-	-	-	-	-	-
ICHdw	1a	1021	Fd Pl	Fd[58] Lw Pl[71] Py Cw[42]	Cw Pw[31,49] Sx	Bl[10,13] Bg Pw[57] Hw Sx	Bl Hw Lw[23]	1200	700	600	7	12	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0
	01b	1022	Fd	Fd[58] Lw Pl Py Cw Bg[58]	Pl[49] Pw[31,49]	Sx Hw Pw[57] Bl[10,13]	Bl[28] Cw[28] Hw[28] Lw[23] Sx[28]	1200	700	600	7	12	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0
	02	1023	Fd Pl	Fd[58] Lw Pl[71] Py	Bl[28] Pw[31,49] Sx[10,13,28]	Cw Hw Pw[57]	Cw[28] Hw[28] Lw[23]	1000	500	400	7	12	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0
	03	1024	Fd Pl	Fd[58] Lw Bg[58] Cw Sx	Pw[31,49]	Pl Pw[57] Hw Bl[10,13]	Bl[28] Cw[28] Hw[28] Lw[23] Pa Sx[28]	1200	700	600	4	9	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0
	04	1025	Cw[32] Fd[1,32] Hw[32] Sx	Fd[58] Lw Bg[58] Cw Hw Sx	Bl Pl Pw[1,32,49]	Pl Bl[10,13] Pw[57]		1200	700	600	4	9	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0

1,2 etc - see "Footnotes"

*Avoid logging

** Additional information or requirements may be contained in the text portion of the reference guide

Reference Guide for FDP Stocking Standards**

BGC		ID #	Regeneration									Free Growing			
Classification			Species					Stocking(I)			Regen	Assessment		Min. Height(II)	
			Conifer					Target	MIN pa	MIN p	Delay	Earliest	Latest	Species	Ht
Zone/SZ	Series		Primary	Preferred (p)	Secondary	Acceptable (a)	Tertiary	(well-spaced/ha)			(Max yrs)	(yrs)	(yrs)		(m)
ICHmw2	01	1031	Fd Lw	Cw Sx[71] Hw Fd[58] Lw Pl[71]	Cw Pl Sx[10,13]	Pw[57] Bl Py[14,23]	Bl[10,13] Pw[31] Py[9,14,23] Hw	1200	700	600	4	9	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0
	02	1032	non-forested	non-forested				-	-	-	-	-	-	-	-
	03	1033	Fd Lw Pl	Fd[58] Lw Pl Sx[42, 71] Hw		Pw[57] Bl Cw Py[14,23]	Bl[10,13] Cw Pw[31] Py[9,14,23] Hw Sx[10,13]	1200	700	500	7	12	15	Pl Lw Fd, Pw Others	2.0 2.0 1.4 1.0
	04	1034	Fd Lw Pl	Fd[58] Lw Pl Sx[71] Cw Hw	Sx[10,13]	Pw[57] Bl Py[14,23]	Bl[10,13] Cw Pw[31] Py[9,14,23] Hw	1200	700	600	7	12	15	Pl Lw Fd, Pw Others	2.0 2.0 1.4 1.0
	05	1035	Cw Fd[9,14] Hw Lw[9,14] Sx	Fd[58] Lw Sx[71] Cw Hw	Bl Pl	Bl Pl Pw[57]	Pw[31]	1200	700	600	4	9	15	Pl Lw Fd, Pw Others	2.0 2.0 1.4 1.0
	06	1036	Cw[32] Sx	Fd[58] Lw Sx[71] Cw Hw	Bl Fd[1,32] Hw[32] Lw[1,32] Pl	Bl Pl Pw[57]	Pw[31]	1200	700	600	4	9	15	Pl Lw Fd, Pw Others	2.0 2.0 1.4 1.0
	07	1037	Cw[1,32] Sx[1]	Cw Hw Sx[71]	Bl[1] Hw[1,32] Pl[1]	Bl Pw[57]	Pw[1,31]	1000	500	400	4	9	15	Pl Others	1.4 0.8
	08	1038	Cw[1,32] Pl[1] Sx[1]	Cw Hw Sx[71]	Bl[1] Hw[1, 32]	Bl Pw[57]		1000	500	400	4	9	15	Pl Others	1.4 0.8
	09	1039	non-forested	non-forested				-	-	-	-	-	-	-	-
ICHvk1	01	1041	Cw[32] Sx	Cw Sx Hw Fd[14,58]	Bl Fd[1,9,14,32,34] Hw[32]	Pw[57] Yc[23] Bl[23]	Pw[31]	1200	700	600	4	9	15	Pw Fd Others	1.4 1.4 1.0
	03	1043	Fd[9]	Fd[58] Cw Sx Hw	Bl Cw Hw Sx	Pw[57] Bl[23]	Lw[9,14,23] Pl[23,34] Pw[31]	1200	700	600	4	9	15	Fd, Pw Others	1.4 1.0
	04	1044	Cw Fd[9,14,34] Hw Sx	Cw Fd[14,58] Hw Sx	Bl	Pw[57] Lw[14,23] Yc[23] Bl[23]	Lw[9,14,23] Pw[31]	1200	700	600	4	9	15	Lw Fd, Pw Others	2.0 1.4 1.0
	05	1045	Cw[1,32] Sx[1]	Cw Sx Hw	Bl[1] Hw[1,32]	Bl Pw[57] Yc[23]	Pw[1,31]	1000	500	400	4	9	15	Pw Others	1.4 0.8
	06	1046	Cw[1,32] Hw[1,32] Sx[1]	Cw Hw Sx	Bl[1]	Bl Pw[57]	Pl[23,34] Pw[1,31]	1000	500	400	4	9	15	Pw Others	1.4 0.8
ICHwk1	01	1051	Cw Fd[9,14] Hw Sx	Cw Sx Hw Fd[14,58]	Bl[10,13]	Pw[57] Yc[23] Pl[23] Lw[14,23] Bl[23]	Lw[9,14,23,32] Pl[23,34] Pw[31]	1200	700	600	4	9	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0
	02	1052	non-forested	non-forested				-	-	-	-	-	-	-	-
	04	1054	Fd[9,14]	Cw Sx Hw Fd[14,58]	Cw Hw Sx[10,13]	Pw[57] Pl[23] Lw[14,23] Bl[23]	Bl[10,13] Lw[9,14,23] Pl[23,34] Pw[31]	1200	700	600	4	9	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0
	05	1055	Cw[32] Sx	Cw Sx Hw Fd[14,58]	Bl Fd[1,9,14,32] Hw[32]	Pw[57] Yc[23] Lw[14,23] Bl[23]	Lw[1,14,23,32] Pl[23,34] Pw[31]	1200	700	600	4	9	15	Pl, Lw Fd, Pw Others	2.0 1.4 1.0
	06	1056	Cw[1,32] Sx[1]	Cw Sx Hw	Bl[1] Hw[1,32]	Bl Pw[57]	Pl[1,23,34] Pw[1,31]	1000	500	400	4	9	15	Pl Others	1.4 0.8
	07	1057	Cw[1,32] Sx[1]	Cw Sx Hw	Bl[1] Hw[1,32]	Bl Pw[57]	Pw[1,31]	1000	500	400	4	9	15	Pl Others	1.4 0.8
	08	1058	Cw[1,32] Hw[1,32] Sx[1]	Cw Sx Hw	Bl[1]	Bl Pl[23]	Pl[23,34]	1000	500	400	4	9	15	Pl Others	1.4 0.8
	09	1059	non-forested	non-forested				-	-	-	-	-	-	-	-
IDF un	01	1061	Fd[32] Lw[32] Py	Fd[58] Lw Py	Pl[10,13]	Cw Pw[57] Sx		1200	700	600	7	12	15	Pl, Lw	1.6

1,2 etc - see "Footnotes"

*Avoid logging

** Additional information or requirements may be contained in the text portion of the reference guide.

Reference Guide for FDP Stocking Standards**

BGC [illegible] ID #			Regeneration									Free Growing			
Classification			Species					Stocking(i)			Regen	Assessment		Min. Height(ii)	
			Conifer					Target	MIN pa	MIN p	Delay	Earliest	Latest	Species	Ht
Zone/SZ	Senes		Primary	Preferred (p)	Secondary	Acceptable (a)	Tertiary	(well-spaced/ha)			(Max yrs)	(yrs)	(yrs)		(m)
(based on IDFmw1)				Pl[71] Bg[71]										Fd, Pw Others	1.0 0.8
	02	1062	non-forested	Py Fd[58]		Lw Pl		600	400	400	7	12	15	Pl, Lw Fd Others	1.6 1.0 0.8
	03	1063	Fd[27] Py	Fd[58] Py Pl[71]	Lw[10.13]	Lw	Pl[10.13]	1000	500	400	7	12	15	Pl, Lw Fd Py	1.6 1.0 0.8
	04	1064	Fd[32] Lw[32] Pl	Fd[58] Lw Pl[71] Py	Sx	Bg Pw[57]	Py[9.14]	1000	500	400	7	12	15	Pl, Lw Fd, Pw Others	1.6 1.0 0.8
	05	1065	Pl Sx	Pl[71] Sx[71] Fd[58] Lw Bg[58]	Fd[1.32] Lw[1.32]	Py Cw Pw[57]		1200	700	600	7	12	15	Pl, Lw Fd, Pw Others	1.6 1.0 0.8
	06	1066	Sx[1]	Sx[71] Fd[58] Lw Bg[58]	Fd[1.32] Lw[1.32] Pl[1]	Pl Cw Pw[57]		1200	700	600	4	9	15	Pl, Lw Fd, Pw Others	1.6 1.0 0.8

1,2 etc - see "Footnotes"

*Avoid logging

** Additional information or requirements may be contained in the text portion of the reference guide.

Intermediate Cut, No Regeneration Objectives-Standards

Minimum Basal Area Retained (M^2/ha)	Standards ID #	Additional Criteria (all areas)
70	1181	**To qualify as an intermediate cut a minimum of 40 % of the stands original basal area must be retained.**
60	1182	
50	1183	
40	1184	
30	1185	
20	1186	
15	1187	

Preferred and acceptable species to be retained are as specified in Table A by biogeoclimatic ecosystem classification (BEC) site series. **All** layer one trees that meet mininimum leave tree characteristics considered preferred and count towards stocking.

Minimum leave tree characteristics:

Stands Age Class 6 and Younger:

Layer 1 trees must meet limits defined in the Tree Wounding and Decay guidebook (Feb 97)-Uneven Aged Management Objective to be acceptable.

All trees must meet criteria defined in Appendix 10, Establishment to Free Growing Guidebook: Nelson Region - May 2000.

Stands Age Class 7 and Older

Layer 1 trees must meet the limits defined in the Cruising Manual (effective December 5, 2002) for tree classes 1, 2, 5, and 8.

All trees must meet criteria defined in Appendix 10, Establishment to Free Growing Guidebook: Nelson Region - May 2000.

Minimum Strata Size for Reforestation Obligations:

Any contiguous strata greater than one hectare, that as a result of harvesting have a basal area less than 15 m2 per ha, shall be reforested as specified in Table A by BEC site series.

Stocking Requirements for Multi-Layered Stands

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5
Target from Table A standards	Layer**	Stocking***			**Target from Table A standards**	Layer**	Stocking***		
		Target pa	MIN pa	MIN p			Target pa	MIN pa	MIN p
(stems/ha)/Standards ID #		(well-spaced/ha)			(stems/ha)/Standards ID #		(well-spaced/ha)		
1200-(1201)	1	600	300	250	**800-(1204)**	1	300	150	150
	2	800	400	300		2	400	200	200
	3	1000	500	400		3	600	300	300
	4	1200	700	600		4	800	400	400
1000-(1202)	1	400	200	200	**600-(1205)**	1	300	150	150
	2	600	300	250		2	400	200	200
	3	800	400	300		3	500	300	300
	4	1000	500	400		4	600	400	400
900-(1203)	1	400	200	200	**400-(1206)**	1	200	100	100
	2	500	300	250		2	300	125	125
	3	700	400	300		3	300	150	150
	4	900	500	400		4	400	200	200

MIN - minimum

* Maximum regeneration delay is seven years. For a seven-year regeneration delay, the early free growing is 12 years and the late free growing is 15 years. Regeneration delay can be met immediately following harvest if the residual stand has no significant damage or pest problems and meets minimum stocking standards. If regeneration is achieved immediately following harvest, earliest free growing date is 12 months after completion of harvest and the latest date is 24 months after completion of harvest.

**_Stand Layer Definition_

Layer 1	Mature	trees >= 12.5 cm dbh
Layer 2	Pole	trees 7.5 cm to 12.4 cm dbh
Layer 3	Sapling	trees >= 1.3 m height to 7.4 cm dbh
Layer 4	Regeneration	trees < 1.3 m height

*** pa - preferred and acceptable species   p - preferred species

Preferred and acceptable species and "Target from Table A standards' are as specified in Table A by biogeoclimatic ecosystem classification (BEC) site series.

Reference Guide for FDP Stocking Standards

Conifer Tree Species

"Ba" means amabilis fir;
"Bg" means grand fir;
"Bl" means subalpine fir;
"Bp" means noble fir;
"Cw" means western red cedar;
"Fd" means Douglas-fir;
"Hm" means mountain hemlock;
"Hw" means western hemlock;
"Lt" means tamarack;
"Lw" means western larch;
"Pa" means whitebark pine;
"Pl" means lodgepole pine;
"Pw" means white pine;

"Py" means ponderosa pine;
"Sb" means black spruce;
"Se" means Engelmann spruce;
"Ss" means Sitka spruce;
"Sw" means white spruce;
"Sx" means hybrid spruce or interior spruce;
"Sxs" means hybrid Sitka spruce;
"Sxw" means hybrid white spruce;
"Yc" means yellow cedar

Broadleaf Tree Species

"Acb" means balsam poplar;
"Act" means black cottonwood;
"At" means trembling aspen;
"Dr" means red alder;
"Ep" means common paper birch;
"Mb" means bigleaf maple;
"Qg" means garry oak;
"Ra" means arbutus;

"**Biogeoclimatic unit**" or "**BGC classification**" means the zone, subzone, variant and site series described in the most recent field guide published by the Ministry of Forests for the identification and interpretation of ecosystems, as applicable to a harvested area

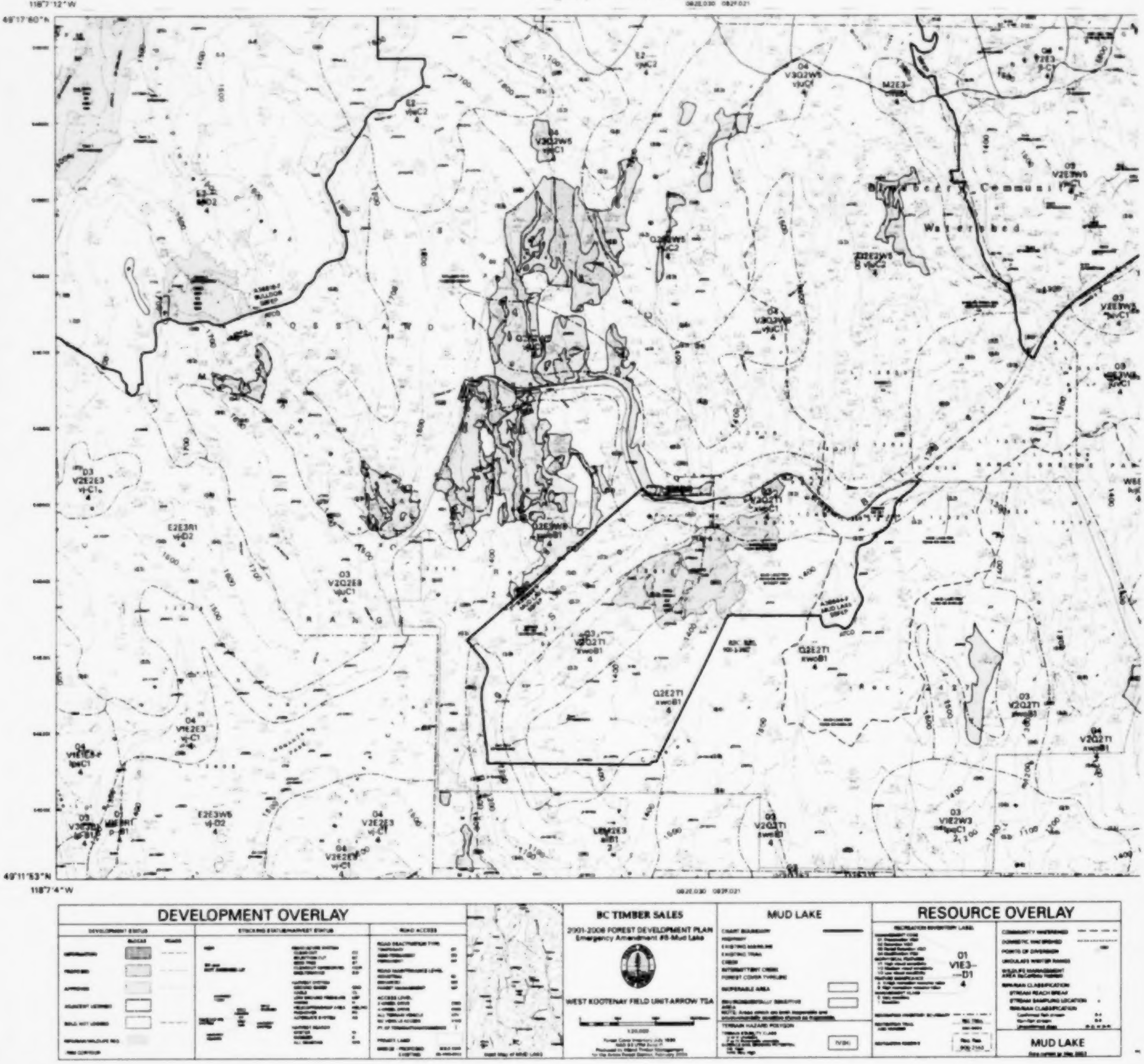
"**MIN** or "**Min**" means minimum

"**P**" means Preferred, "**A**" means Acceptable

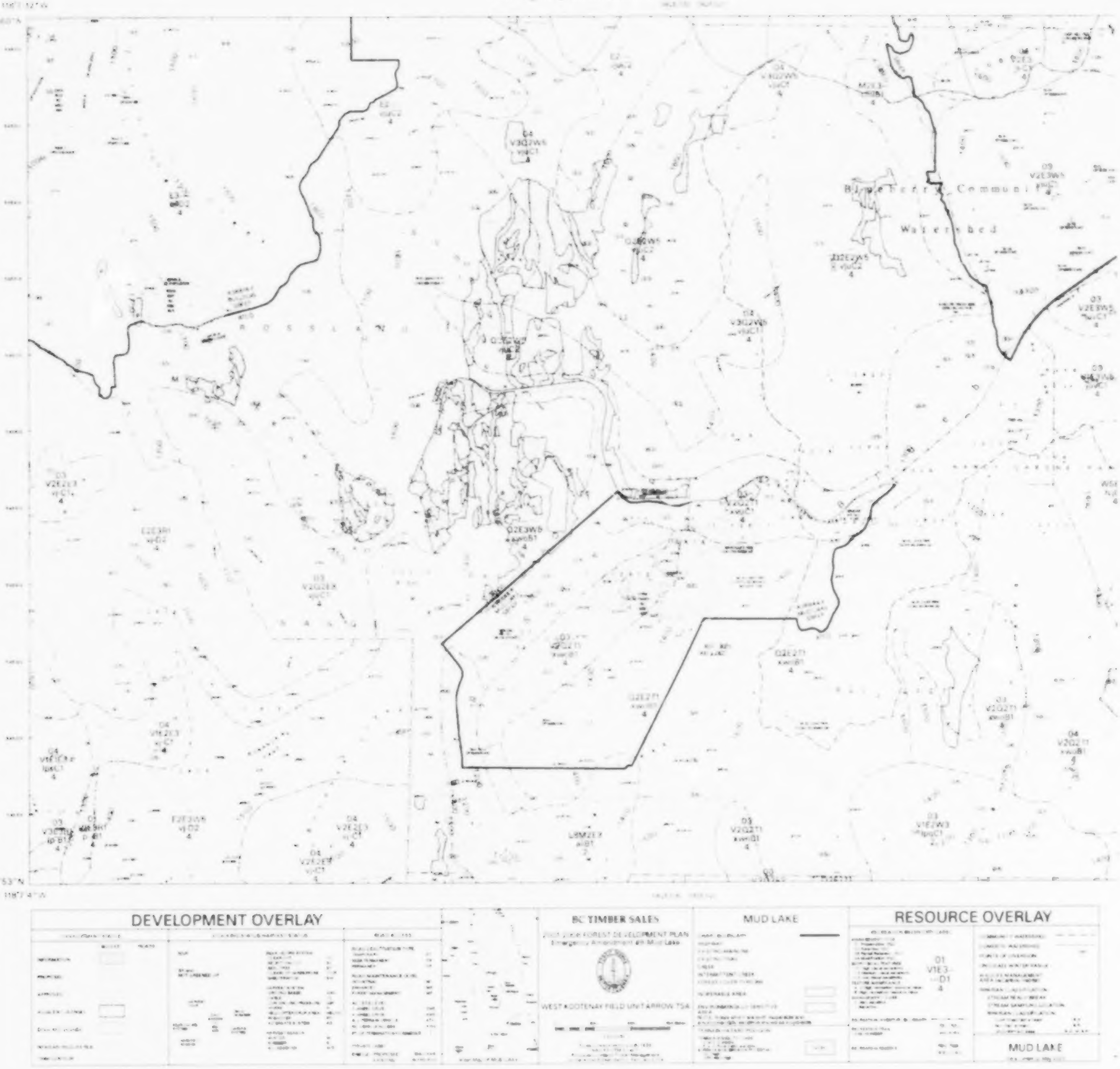
Footnote #	Footnote
1	elevated microsites are preferred
2	suitable on thick forest floors
3	restricted to coarse-textured soils
4	restricted to medium-textured soils
5	footnote retired
6	restricted to nutrient-very-poor sites
7	restricted to nutrient-medium sites
8	restricted to steep slopes
9	restricted to southerly aspects
10	restricted to northerly aspects
11	restricted to crest slope positions
12	suitable on cold air drainage sites
13	restricted to upper elevations of biogeoclimatic unit
14	restricted to lower elevations of biogeoclimatic unit (species not acceptable within 200m (vertical) of units max eleva
15	restricted to northern portion of biogeoclimatic unit in region
16	restricted to southern portion of biogeoclimatic unit in region
17	restricted to western portion of biogeoclimatic unit in region
18	restricted to eastern portion of biogeoclimatic unit in region
19	restricted, not in Queen Charlotte Islands
20	restricted, not near outer coast
21	restricted to mainland
22	restricted to southern Gardner Canal-Kitlope area
23	restricted to max 20% of well spaced P&A
24	suitable (as a major species) in wetter portion of biogeoclimatic unit
25	suitable on sites lacking salal
26	suitable minor species on salal-dominated sites
27	partial canopy cover required for successful establishment
28	limited by moisture deficit
29	risk of heavy browsing by moose
30	risk of porcupine damage
31	risk of white pine blister rust
32	limited by growing-season frosts
33	footnote retired and replaced with footnote 'a'
34	risk of snow damage
35	risk of weevil damage
36	suitable major species on salal-dominated sites
37	risk of heart rots
38	footnote retired
39	avoid exposed and windy sites
40	risk of redheart
41	limited by poorly drained soils
42	restricted to fresh soil moisture regimes
43	suitable on mainland coast only (QCI only)
44	suitable in areas with stronger maritime influence
45	suitable in areas with stronger continental influence

Footnote #	Footnote
46	restricted to area north of the Dean Channel
47	risk of balsam wooly adelgid
48	risk of heavy browsing by deer
49	applies only to rust resistant, planted stock
50	restricted to sites where the species occurs as a major species in a pre-harvest, natural stand
51	restricted to areas with proven Pl performance
52	restricted to sheltered microsites with deep soil
53	minor component
54	risk of unsuccessful release of advance regeneration
55	acceptable in sx-sm portion of site series
#	**Broadleaf Management Constraints**
a	productive, reliable, and feasible regeneration option
b	limited in productivity, reliability and/or feasibility
#	**Localized Footnotes**
56	**Kalum** forest district - spruce content restricted to < 20% well spaced and FG trees on a standards unit due to leader weevil
57	**Arrow/Columbia** forest district - Pw rust-resistant stock may be considered preferred species to a max 50% of WSSpa Pw naturals - **acceptable species only** to max 50% /plot, 10% WSSpa. Minimum pruning height 1.0 m applies to natural Pw 2.0 m and taller, required to meet MSSpa
58	**Arrow FD - Fd and Bg limited to planting a max 50% of WSSpa due to Armillaria root rot. No limit following completion of mechanical innoculum removal.**
59	**Prince George region** - max 1,400 total sph of aspen and cottonwood. Treat as 'ghost' trees in surveys
60	**Squamish** forest district - species is acceptable in SFD only
61	**Squamish** forest district - accept on cold air drainage sites only
62	**S. Island** forest district - may only be used as acceptable sp within the balsam woolly adelgid quarantine zone
63	**Queen Charlotte Islands** forest district - must meet DM specified Min WSS p stems per hectare and min height requirements for Cw and/or Yc
64	**North Coast** forest district - species is preferred in NCFD only
65	**North Coast** FD - species is acceptable in NCFD only
66	**Mackenzie** FD - may be preferred where risk of snow damage is low or where risk of frost damage is excessive on spruce
67	**Chilliwack** forest district - species is acceptable in CFD only
68	**Chilliwack** forest district - species is preferred in CFD only
69	Species is restricted to upper elevations when used in the southern portion of the biogeoclimatic unit
70	Restricted to a maximum of 20% of WSSpa on N aspects
71	Restricted to max 50% of WSS or to the extent previously found on site as a commercial species (based on cruise or scale)
72	Restricted to max 25% of WSS or to the extent previously found on site as a commercial species (based on cruise or scale)

Emergency Amendment #8-Mud Lake


118°7'12"W
49°17'60"N
082E.030 082F.021
ROSSLAND RANGE
Blueberry Community Watershed
49°11'53"N
118°7'4"W
DEVELOPMENT OVERLAY
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
Emergency Amendment #8-Mud Lake
WEST KOOTENAY FIELD UNIT-ARROW TSA
MUD LAKE
RESOURCE OVERLAY
01
V1E3-
--D1
4
MUD LAKE

Emergency Amendment #8-Mud Lake


Rossland Range
Blueberry Community Watershed
DEVELOPMENT OVERLAY
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2001-2006 FOREST DEVELOPMENT PLAN
Emergency Amendment #8-Mud Lake
WEST KOOTENAY FIELD UNIT ARROW TSA
MUD LAKE
RESOURCE OVERLAY
01
V1E3
D1
4
MUD LAKE

BRITISH
COLUMBIA

File: 10765-25 2001 FDP

April 28, 2004

«Water_Users_Mail_List__WKFU_Amendment_9»

Dear Sir or Madam:

The BC Timber Sales Program, Kootenay Business Area, has prepared and submitted Major Amendment #9 to its approved 2001-2006 Forest Development Plan within the Arrow Boundary Forest District. This referral letter is in accordance with current Forest Practices Code requirements.

Major Amendment #9 shows proposed road construction and forest harvesting within the consumptive watersheds of Blueberry Creek, China Creek, Trozzo Creek, Winlaw Creek, Pedro Creek, Pedro Face, and Burton Face; and non-consumptive watersheds near Ymir. In addition, Amendment #9 covers salvage of burnt timber associated with the Mt. Marshall Fire near Burton.

This proposed amendment is available for review and comment from May 3, 2004 to July 2, 2004. A shortened review period for the Mt. Marshall Fire will end May 25th with proposed harvesting to commence soon afterwards.

A copy of Amendment #9 is available for review at the following locations:

Kootenay Lake Forestry Centre, 1907 Ridgewood Rd, Nelson	8:30 am to 4:00 pm Monday through Friday	250-825-1100
Castlegar and Nakusp Offices	By Appointment Only	250-365-8600

On the web: http://www.for.gov.bc.ca/ftp/TKO/external/!publish/FDP_Amendment_9

In addition, a public open house will be held at the Winlaw Hall on May 19 from 2 to 8 pm. BC Timber Sales staff will be on hand to answer any questions.

Ministry of Forests

BC Timber Sales
Kootenay Business Area, Nelson

Location:
1907 Ridgewood Rd
Nelson, British Columbia
V1L 6K1

Mailing Address:
1907 Ridgewood Rd
Nelson, British Columbia
V1L 6K1

Tel: (250) 825-1100
Fax: (250) 825-9657

Written comments will be received until close of business on May 25th for the Mt. Marshall Fire, and July 2nd for all other areas. Please direct all correspondence regarding this plan to Sandi Best, R.P.F., Planning Forester, at the address listed below. Earlier submissions are appreciated.

Yours truly,

Sandi Best, M.Sc., R.P.F.
Planning Forester

BRITISH
COLUMBIA

File. 10765-25 2001 FDP

April 28, 2004

«Tribal_Council_and_Address»

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This proposed amendment is available for review and comment from May 3, 2004 to July 2, 2004. A shortened review period for the Mt. Marshall Fire will end May 25th with proposed harvesting to commence soon afterwards.

A copy of Amendment #9 is available for review at the following locations:

Kootenay Lake Forestry Centre, 1907 Ridgewood Rd, Nelson	8:30 am to 4:00 pm Monday through Friday	250-825-1100
Castlegar and Nakusp Offices	By Appointment Only	250-365-8600

On the web: http://www.for.gov.bc.ca/ftp/TKO/external/!publish/FDP_Amendment_9

In addition, a public open house will be held at the Winlaw Hall on May 19 from 2 to 8 pm. BC Timber Sales staff will be on hand to answer any questions.

Written comments will be received until close of business on May 25th for the Mt. Marshall Fire, and July 2nd for all other areas. Please direct all correspondence regarding this plan to Sandi Best, R.P.F., Planning Forester, 1907 Ridgewood Road, Nelson, BC V1L 6K1. Earlier submissions are appreciated.

Ministry of Forests

BC Timber Sales
Kootenay Business Area, Nelson

Location:
1907 Ridgewood Rd
Nelson, British Columbia
V1L 6K1

Mailing Address:
1907 Ridgewood Rd
Nelson, British Columbia
V1L 6K1

Tel: (250) 825-1100
Fax: (250) 825-9657

In addition to this letter of referral, the Ministry of Forests will continue to provide opportunity for meaningful consultation to address your aboriginal interests within the Arrow Boundary Forest District. In the mean time, if you have questions or comments regarding your aboriginal interests related to this proposed amendment and the Provincial Government's duty of consultation, please contact Ted Evans, Stewardship/First Nations Forester, Arrow Boundary Forest District at 250-365-8680.

Yours truly,

Sandi Best, M.Sc., R.P.F.
Planning Forester

BCTS ARROW TSA
2001-2006 FOREST DEVELOPMENT PLAN
MAJOR AMENDMENT
(As per Section 34 of the *Forest Practices Code of British Columbia Act*)

Initial Submission Date: May 3, 2004
Final Submission Date: July 2004 (anticipated)

Amendment: # 9

Reason for Amendment:

This amendment is required to update and add the following items to the Forest Development Plan:

1. Add new blocks and roads to access timber for control of pests, salvage of timber damaged as a result of fire and blowdown, and normal harvesting operations.
2. Blocks previously approved need updating and approval as a result of changes due to layout and assessment work.

Description of Amendment:

1. See attached Appendix 7.1.1 Table A - Harvest Summary Table and Maps.
2. See attached Appendix 7.1.2 Table B - Engineering Access Management Table.
3. See attached Appendix 7.1.6 Table F - ECA's for Domestic Watersheds Where Development is Proposed.

Brief Highlights of Changes:

Mapsheet	**TSL # or Pre#**	**Nature of Amendment**	**Comments**
Burton	A65389-3	New Block	Mt. Marshall Fire (Fire 451)
Burton	A65389-1	Minor Amendment	Shown to be consistent with internal minor amendment.
Burton	A65389-2	Minor Amendment	Shown to be consistent with internal minor amendment
Burton	BR-2	Increase in block size	To address total chance
Burton	A72619	New Block	To address total chance
Burton	A70237	Block shape and access changed	To address total chance
Burton	A70238	Minor Amendment	Shown to be consistent with internal minor amendment
Burton	A70239	Minor Amendment	Shown to be consistent with internal minor amendment
Burton	A70240	Block reconfiguration	To address total chance
Winlaw	A59996-13	Change in block size	To address mountain pine beetle
Winlaw	A59997	Minor Amendment	Shown to be consistent with internal minor amendment

Winlaw	A59998	Minor Amendment	Shown to be consistent with internal minor amendment
Winlaw	A60000	Minor Amendment	Shown to be consistent with internal minor amendment
Winlaw	A60001	Change in block size	To address mountain pine beetle
Winlaw	WI-15	New Block	To address mountain pine beetle
College	A65404	New Block	To address mountain pine beetle
College	A72332	New Block	To address blowdown
Ymir	A60030-1/YM-11	New Block	To address mountain pine beetle

Add to Section 3.3.2

3.3 Water

3.3.2 Watershed Assessments

Community Watersheds:
Within this FDP amendment, harvesting is proposed within three community watersheds – China Creek, Blueberry Creek and Caribou Creek. The Arrow Boundary Forest District Manager has approved an IWAP Exemption for China Creek under section 14(3) of the Operational and Site Planning Regulation. Blueberry Creek had an IWAP update completed in fall 2003. The proposed harvesting is consistent with the results and recommendations of this update. Caribou Creek had an IWAP update completed in 2002. The recommended ECA for the Goat Canyon Sub-basin is 30%. ECA following harvest of the Mt. Marshall Fire will remain below this level.

The following table shows the proposed development within Community Watersheds.

Community Watershed	Proposed Harvest
Caribou Creek	A65389-3 (Mt. Marshall Fire)
China Creek	A72332 (Blowdown)
Blueberry Creek	A65404 (Mountain Pine Beetle)

Domestic Watersheds:

Equivalent clearcut areas, ECA's, have been updated for blocks which fall within domestic consumptive watersheds. An updated ECA Table in shown in Appendix 7.1.6 Table F.

Forest Practices Variances

Appendix 7.1.11 Table J identifies the sections of the Forest Practices Code for which we are seeking variances along with a block rationale.

Advertisements

BC Timber Sales Arrow TSA Amendment #9 has been advertised on the Official Notices website and local newspapers including the Arrow Lakes News, Castlegar Citizen, Nelson Daily News, Pennywise, The Valley Voice and the West Kootenay Weekender. Copies of the advertisements are included in this amendment. The text and appendices of this FDP have also been published on the BC Timber Sales Kootenay Business Area ftp site (http://www.for.gov.bc.ca/ftp/TKO/external/!publish/FDP_Amendment_9).

Referrals, Correspondence and Review Comments

Referral letters have been sent to a number of individuals, licensed resource users, First Nations, government agencies, and organized groups. Copies of the referral letters sent, along with their mailing lists, are included with this amendment.

Proposed harvest plans in the Winlaw Operating Area were presented to the Winlaw Watershed Committee in March. A public open house is scheduled in Winlaw on May 19, 2004. The sign-in sheets will be included with the final submission.

Comments and responses to this submission that are received during the review and comment period will be attached to the final submission.

The following are attached:

1. Appendix 7.1.1 Table A - Harvest Summary Table
2. See attached Appendix 7.1.2 Table B - Engineering Access Management Table.
3. Mapsheets: Burton, College, Winlaw, and Ymir. The rest of the information shown on the existing maps has been updated. Some in-block roads are shown on the maps for information purposes only and are not included in the Engineering Access Management Table. These in-block roads may be subject to change without further amendment of this Forest Development Plan.
4. Appendix 7.1.6 Table F - ECA's for Domestic Watersheds Where Development is Proposed.
5. 7.1.11 Appendix J – Forest Practices Variances
6. 7.1.12 Appendix K – Advertisements
7. 7.1.13 Appendix L – Referrals, Correspondence and Review Comments

To the best of my knowledge, the proposed amendment meets the requirements of the Forest Practices Code of British Columbia Act (FPCA), the regulations, and the instructions to the Arrow Boundary District Licensees with regards to FDP standards. I request that you review Amendment #9 and if it meets with your satisfaction, that you give effect to this amendment in accordance with Section 41 (1) of the FPC of BC Act.

Certified by (RPF):

SARAH BEST
No. 3317

Sarah Best

Date: May 3, 2004

BCTS Forester Acknowledgement:

____

Date: ________________

Approved By:
Section 41.(1) of the FPC of BC Act ____
Section 42.(1) of the FPC of BC Act ____

____
District Manager
Or Authorized Person

Date: ______________________

[redacted]

Section 7.1.1 Appendix A - Harvest Summary Table

TSL	A65404	A72332	YM-11/A60030-1	YM-12/A70462	A59996-13	A59997	A59998	A60000
Composite Map Name	College	College	Ymir	Ymir	Winlaw	Winlaw	Winlaw	Winlaw
Map Reference	82F022	82F022	82F025	82F035	82F063	82F063	82F063	82F063
Geographic Location	College Creek	College Cr.	Oscar Cr.	Avalanche Creek	Trozzo Cr.	Trozzo Cr.	Trozzo Cr.	Trozzo Cr.
Lat./Long.	49°16'/117°45'	49°16'/117°43'	49°17'/117°8'	49°21'/117° 07'	49°38'/117°29'	49°38'/117°29'	49°38'/117°29'	49°38'/117°29'
Anticipated Sale Date	2004	2004	2004	2005	2005	2005	2005	2005
Gross Area (ha)	1.8	41.4	87.0	144.0	30.0	15.9	45.4	19.3
Wildlife Tree Patches (ha)	N/A	2.3	8.7	84.5	14.7	5.8	21	8
Other Reserves (ha)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Net Area to Reforest (ha)	1.8	39.1	78.3	59.5	15.3	10.1	24.4	11.3
Total Harvest Volume (m3)	500	5685	6000	4908	3928	5211	3500	3789
Silviculture System	Clearcut/R	Clearcut//Clearcut/R	Clearcut/R	Clearcut/R	Clearcut/R	Selective	Selective	Clearcut
Harvest Method	Ground	Ground/Cable	Ground/Cable	Aerial	Ground/Cable	Ground/Cable	Cable	Ground
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N508	N508	N505	N505	N513	N513	N513	N513
Mapped BEC	ICHmw2/ESSF/wc1	ICHmw2	ICHmw2/ESSFwc1&4	ESSFwc1&4	ICHmw2/ICHdw	ICHmw2/ICHdw	ICHmw2/ICHdw	ICHmw2/ICHdw
Natural Disturbance Type	2	2	2	2	2 & 3	2 & 3	2 & 3	2 & 3
Biodiversity Emphasis	Low	Low	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
Resource Management Zone	Arrow	Arrow	Arrow	Arrow	Arrow	Arrow	Arrow	Arrow
Watershed Name	Blueberry	Blueberry / China	N/A	N/A	Trozzo Creek	Trozzo Creek	Trozzo Creek	Trozzo Creek
Watershed Class	Community	Community	N/A	N/A	3	3	3	3
Proposed ECA % *	28.4	28.4 / 22.1	N/A	N/A	**21.4**	**21.4**	**21.4**	**21.4**
Riparian Classifications	S3/S4	S4/S3	S6	S6	S3	S3/S4/S5/S6	S3/S4/S6	S3
Wildlife Habitat Status	GWM	GWM	GWM	Caribou	GWM	GWM	GWM	GWM
Available Old (ha)	0 / 0	0	31 / 19	19	86 / 123	86 / 123	86 / 123	86 / 123
Available Old/Mature (ha)	337 / 89	337	509 / 409	409	515 / 334	515 / 334	515 / 334	515 / 334
Forest Cover Label	PIFL(At)5315-16	PI5315-19	PIB5314-19	PIB(F) 631-17	PIF(L) 5315-16	HCF540	FH(CPwB)7316-16	FH(CPwB)7316-16
		FPwPI8414-17		BS 831-13	FL(PI) 7316-16	CHL740	FL(PI) 7316-16	PILF 5317-16
Green-up of adjacent Block	SR	SR	N/A	N/A	N/A	N/A	N/A	N/A
Detailed Terrain Analysis	required	**2004**	required	N/A	required	required	required	required
Flat Over Steep Analysis	N/A	**2004**	N/A	N/A	required	required	required	required
Soil Erosion Field Assessment	required	**2003/2004**	N/A	N/A	N/A	N/A	N/A	N/A
Visual Impact Assessment	required	2003	required	required	required	required	required	required
Archaeological Impact	N/A	2003	required	N/A	N/A	N/A	N/A	N/A
Avalanche Analysis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pest Incidence Survey	N/A	N/A	2003	N/A	N/A	N/A	N/A	N/A
Current Category Status	Proposed	Proposed	Proposed	Information	Proposed	Approved	Approved	Approved
Change From Last Plan?	Yes, minor	Yes	Yes	Yes	Yes	Minor	Minor	Minor

Section 7.1.1 Appendix A - Harvest Summary Table

TSL	A60001	**WI-15 (A74334 1&2)**	A65389-1	A65389-2	A70237	A72619	A70238
Composite Map Name	Winlaw	Winlaw	Burton	Burton	Burton	Burton	Burton
Map Reference	82F063	82F053	82F092	82F091 & 92	82F092	82F092	82F092
Geographic Location	Trozzo Cr.	Pedro Cr	Goat Canyon	Goat Canyon	Snow Creek	Snow Creek	Snow Creek
Lat./Long	49°38'/117°29'	49°34'/117°32'	49°57'/117°47'	49°57'/117°47'	49°56'/117°44'	49°56'/117°44'	49°57'/117°43'
Anticipated Sale Date	2004	2004	2004	2004	2004	2004	2006
Gross Area (ha)	94.5	**1=16.4, 2=103.5**	30.9	45.2	39.7	51.9	9.4
Wildlife Tree Patches (ha)	8.5	**approx. 12.0**	5.6	7.7	8.2	12.4	2.3
Other Reserves (ha)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Net Area to Reforest (ha)	82.3	**107.9**	24.4	35.6	26.5	35.5	6.6
Total Harvest Volume (m3)	28998	**19150**	6766	10474	18000	20000	3343
Silviculture System	Clearcut	Clearcut/R	Clearcut	Clearcut	Clearcut	Clearcut	Clearcut
Harvest Method	Ground/Cable	Ground	Ground	Ground	Cable	Cable	Cable
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N513	N513	N521/N522	N521/N522	N521	N521	N521
Mapped BEC	ESSFwc1/ICHmw2	ICHmw2/ICHdw	ESSFwc4	ESSFwc4	ICHmw2	ICHmw2	ICHmw2
Natural Disturbance Type	2	2 & 3	1	1	2	2	2
Biodiversity Emphasis	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
Resource Management Zone	Arrow	Arrow	Arrow	Arrow	Arrow	Arrow	Arrow
Watershed Name	**Trozzo, Winlaw, Dumont**	Winlaw,Pedro,Pedro/Winlaw Face	Caribou	Caribou	N/A	N/A	N/A
Watershed Class	3	1&3	Community	Community	N/A	N/A	N/A
Proposed ECA % *	**21.4 / 10.1 / 12.1**	**10.1 / 23.2 / 15.4**	N/A	N/A	N/A	N/A	N/A
Riparian Classifications	S6	**(S4),S6(L3)**	NCD	N/A	S6/S2-Snow cr	S6/S2-Snow cr	S6/S2-Snow cr
Wildlife Habitat Status	GWM	GWM	GWM	GWM	GWM	GWM	GWM
Available Old (ha)	7 / 86	86 / 123	0 / 16	0 / 16	4	4	4
Available Old/Mature (ha)	113 / 515	515 / 334	269 / 377	269 / 377	2032	2032	2032
Forest Cover Label	PI5315-16	PIF5305-19	BS8414-12	BS(PI)6306-16	FLH-5306-19	L(HCFPw)4307-18	FLCH(PI)5307-19
		FPI6305-16		PI(bs06316-17			
Green-up of adjacent Block	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Detailed Terrain Analysis	**2004**	**2004**	2000	2000	2003	2003	2003
Flat Over Steep Analysis	**2004**	**2004**	N/A	N/A	N/A	N/A	N/A
Soil Erosion Field Assessment	N/A	N/A	2000	2000	N/A	N/A	N/A
Visual Impact Assessment	required	required	1999	1999	N/A	N/A	N/A
Archaeological Impact	N/A	required	N/A	N/A	N/A	N/A	N/A
Avalanche Analysis	N/A	N/A	N/A	N/A	N/A	N/A	2001
Pest Incidence Survey	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Current Category Status	Proposed	Proposed	Approved	Approved	Proposed	Proposed	Approved
Change From Last Plan?	Yes	Yes	Minor	Minor	Yes	Yes	Minor

Section 7.1.1 Appendix A - Harvest Summary Table

TSL	A70239	A70240	**BR2 (A68108)**
Composite Map Name	Burton	Burton	Burton
Map Reference	82F092	82F092	82F091
Geographic Location	Snow Creek	Snow Creek	Burton face
Lat./Long.	49°57'/117°42'	49°57'/117°42'	49°57'/117°51'
Anticipated Sale Date	2006	2006	2004
Gross Area (ha)	33.1	47.1	75.2
Wildlife Tree Patches (ha)	13.3	26.8	16.4
Other Reserves (ha)	N/A	N/A	0.0
Net Area to Reforest (ha)	18.3	17.5	15.0
Total Harvest Volume (m3)	8804	12800	**3500**
Silviculture System	Clearcut	Clearcut	Select
Harvest Method	Cable	Cable	Cable
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N521	N521	N521
Mapped BEC	ICHmw2	ICHmw2	ICHmw2
Natural Disturbance Type	2	2	2
Biodiversity Emphasis	Intermediate	Intermediate	Intermediate
Resource Management Zone	Arrow	Arrow	Arrow
Watershed Name	N/A	N/A	Burton Face
Watershed Class	N/A	N/A	1
Proposed ECA % *	N/A	N/A	**9.2**
Riparian Classifications	S6/S2-Snow cr	S6/S2-Snow cr	S6
Wildlife Habitat Status	GWM	GWM	UWR
Available Old (ha)	4	4	4
Available Old/Mature (ha)	2032	2032	2032
Forest Cover Label	FLHC-6306-16	FLH(C)-6306-18	LFHC 6306-17
Green-up of adjacent Block	N/A	SR	N/A
Detailed Terrain Analysis	2003	2003	Required
Flat Over Steep Analysis	N/A	N/A	N/A
Soil Erosion Field Assessment	N/A	N/A	Required
Visual Impact Assessment	N/A	N/A	Required
Archaeological Impact	N/A	N/A	N/A
Avalanche Analysis	2001	2001	N/A
Pest Incidence Survey	N/A	N/A	N/A
Current Category Status	Approved	Proposed	Proposed/Approved
Change From Last Plan?	Minor	Yes	Yes

HARVEST SUMMARY TABLE

TSL	**A65404**	**A72332**	**YM-11/A60030-1**
Composite Map Name	College	College	Ymir
Map Reference	82F022	82F022	82F025
Geographic Location	College Creek	College Cr.	Oscar cr.
Lat./Long.	49°16'/117°45'	49°16'/117°43'	49°17'/117°8'
Anticipated Sale Date	2004	2004	2004
Gross Area (ha)	1.8	41.4	87.0
Wildlife Tree Patches (ha)	N/A	2.3	8.7
Other Reserves (ha)	N/A	N/A	N/A
Net Area to Reforest (ha)	1.8	39.1	78.3
Total Harvest Volume (m3)	500	5685	6000
Silviculture System	Clearcut/R	Clearcut//Clearcut/R	Clearcut/R
Harvest Method	Ground	Ground/Cable	Ground/Cable
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N508	N508	N505
Mapped BEC	ICHmw2/ESSF/wc1	ICHmw2	ICHmw2/ESSFwc1&4
Natural Disturbance Type	2	2	2
Biodiversity Emphasis	Low	Low	Intermediate
Resource Management Zone	Arrow	Arrow	Arrow
Watershed Name	Blueberry	Blueberry / China	N/A
Watershed Class	Community	Community	N/A
Proposed ECA % *	28.4	28.4 / 22.1	N/A
Riparian Classifications	S3/S4	S4/S3	S6
Wildlife Habitat Status	GWM	GWM	GWM
Available Old (ha)	0 / 0	0	31 / 19
Available Old/Mature (ha)	337 / 89	337	509 / 409
Forest Cover Label	PIFL(At)5315-16	PI5315-19	PIB5314-19
		FPwPI8414-17	
Green-up of adjacent Block	SR	SR	N/A
Detailed Terrain Analysis	required	required	required
Flat Over Steep Analysis	N/A	required	N/A
Soil Erosion Field Assessment	required	2003	N/A
Visual Impact Assessment	required	2003	required
Archaeological Impact	N/A	2003	required
Avalanche Analysis	N/A	N/A	N/A
Pest Incidence Survey	N/A	N/A	2003
Current Category Status	Proposed	Proposed	Proposed
Change From Last Plan?	Yes, minor	Yes	Yes

HARVEST SUMMARY TABLE

TSL	YM-12/A70462	A59996-13	A59997	A59998
Composite Map Name	Ymir	Winlaw	Winlaw	Winlaw
Map Reference	82F035	82F063	82F063	82F063
Geographic Location	Avalanche Creek	Trozzo Cr.	Trozzo Cr.	Trozzo Cr.
Lat./Long.	49°21'/117° 07'	49°38'/117°29'	49°38'/117°29'	49°38'/117°29'
Anticipated Sale Date	2005	2005	2005	2005
Gross Area (ha)	144.0	30.0	15.9	45.4
Wildlife Tree Patches (ha)	84.5	14.7	5.8	21
Other Reserves (ha)	N/A	N/A	N/A	N/A
Net Area to Reforest (ha)	59.5	15.3	10.1	24.4
Total Harvest Volume (m3)	4908	3928	5211	3500
Silviculture System	Clearcut/R	Clearcut/R	Selective	Selective
Harvest Method	Aerial	Ground/Cable	Ground/Cable	Cable
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N505	N513	N513	N513
Mapped BEC	ESSFwc1&4	ICHmw2/ICHdw	ICHmw2/ICHdw	ICHmw2/ICHdw
Natural Disturbance Type	2	2 & 3	2 & 3	2 & 3
Biodiversity Emphasis	Intermediate	Intermediate	Intermediate	Intermediate
Resource Management Zone	Arrow	Arrow	Arrow	Arrow
Watershed Name	N/A	Trozzo Creek	Trozzo Creek	Trozzo Creek
Watershed Class	N/A	3	3	3
Proposed ECA % *	N/A	24.3	24.3	24.3
Riparian Classifications	S6	S3	S3/S4/S5/S6	S3/S4/S6
Wildlife Habitat Status	Caribou	GWM	GWM	GWM
Available Old (ha)	19	86 / 123	86 / 123	86 / 123
Available Old/Mature (ha)	409	515 / 334	515 / 334	515 / 334
Forest Cover Label	PIB(F) 631-17	PIF(L) 5315-16	HCF540	FH(CPwB)7316-16
	BS 831-13	FL(PI) 7316-16	CHL740	FL(PI) 7316-16
Green-up of adjacent Block	N/A	N/A	N/A	N/A
Detailed Terrain Analysis	N/A	required	required	required
Flat Over Steep Analysis	N/A	required	required	required
Soil Erosion Field Assessment	N/A	N/A	N/A	N/A
Visual Impact Assessment	required	required	required	required
Archaeological Impact	N/A	AOA 1998	AOA 1998	AOA 1998
Avalanche Analysis	N/A	N/A	N/A	N/A
Pest Incidence Survey	N/A	N/A	N/A	N/A
Current Category Status	Information	Proposed	Approved	Approved
Change From Last Plan?	Yes	Yes	Minor	Minor

HARVEST SUMMARY TABLE

TSL	A60000	A60001	WI-15
Composite Map Name	Winlaw	Winlaw	Winlaw
Map Reference	82F063	82F063	82F053
Geographic Location	Trozzo Cr.	Trozzo Cr.	Pedro Cr
Lat./Long.	49°38'/117°29'	49°38'/117°29'	49°34'/117°32'
Anticipated Sale Date	2005	2004	2004
Gross Area (ha)	19.3	94.5	364
Wildlife Tree Patches (ha)	8	8.5	37
Other Reserves (ha)	N/A	N/A	N/A
Net Area to Reforest (ha)	11.3	82.3	327
Total Harvest Volume (m3)	3789	28998	25000
Silviculture System	Clearcut	Clearcut	Clearcut/R
Harvest Method	Ground	Ground/Cable	Ground/Cable
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N513	N513	N513
Mapped BEC	ICHmw2/ICHdw	ESSFwc1/ICHmw2	ICHmw2/ICHdw
Natural Disturbance Type	2 & 3	2	2 & 3
Biodiversity Emphasis	Intermediate	Intermediate	Intermediate
Resource Management Zone	Arrow	Arrow	Arrow
Watershed Name	Trozzo Creek	Trozzo / Winlaw 1	Winlaw,Pedro,Pedro-Winlaw Face
Watershed Class	3	3	1&3
Proposed ECA % *	24.3	24.3 / 12.1	12.1 / 25.9 / 11.0
Riparian Classifications	S3	S6	S4,S6
Wildlife Habitat Status	GWM	GWM	GWM **
Available Old (ha)	86 / 123	7 / 86	86 / 123
Available Old/Mature (ha)	515 / 334	113 / 515	515 / 334
Forest Cover Label	FH(CPwB)7316-16	Pl5315-16	PlF5305-19
	PlLF 5317-16		FPl6305-16
Green-up of adjacent Block	N/A	N/A	N/A
Detailed Terrain Analysis	required	required	required
Flat Over Steep Analysis	required	required	required
Soil Erosion Field Assessment	N/A	N/A	required
Visual Impact Assessment	required	required	required
Archaeological Impact	AOA 1998	N/A	required
Avalanche Analysis	N/A	N/A	N/A
Pest Incidence Survey	N/A	N/A	N/A
Current Category Status	Approved	Proposed	Proposed
Change From Last Plan?	Minor	Yes	Yes

** Block boundary encroaches 2-3 ha into a proposed OGMA. This area will be excluded from the final block design.

HARVEST SUMMARY TABLE

BCTS 2001-2006 FDP Amendment#9
West Kootenay Field Unit-Arrow TSA/TFL 23
Submission for Review and Comment

TSL	**A65389-1**	**A65389-2**	**A65389-3(Fire 451)**	**A70237**
Composite Map Name	Burton	Burton	Burton	Burton
Map Reference	82F092	82F091 & 92	82F091	82F092
Geographic Location	Goat Canyon	Goat Canyon	Goat Canyon	Snow Creek
Lat./Long.	49°57'/117°47'	49°57'/117°47'	49°57'/117°47'	49°56'/117°44'
Anticipated Sale Date	2004	2004	2004	2004
Gross Area (ha)	30.9	45.2	180.7	39.7
Wildlife Tree Patches (ha)	5.6	7.7	3	8.2
Other Reserves (ha)	N/A	N/A	N/A	N/A
Net Area to Reforest (ha)	24.4	35.6	169.4	26.5
Total Harvest Volume (m3)	6766	10474	58000	18000
Silviculture System	Clearcut	Clearcut	Clearcut/ w Res	Clearcut
Harvest Method	Ground	Ground	Ground/Cable	Cable
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N521/N522	N521/N522	N521/N522	N521
Mapped BEC	ESSFwc4	ESSFwc4	ICHmw2/ICHwc1/ESSFwc1	ICHmw2
Natural Disturbance Type	1	1	1 & 2	2
Biodiversity Emphasis	Intermediate	Intermediate	Intermediate	Intermediate
Resource Management Zone	Arrow	Arrow	Arrow	Arrow
Watershed Name	Caribou	Caribou	Caribou/Summer/Burton Face	N/A
Watershed Class	Community	Community	Community/ Dom 2/ Dom1	N/A
Proposed ECA % *			Summer Cr. 71%	N/A
Riparian Classifications	NCD	N/A	S6	S6/S2-Snow cr
Wildlife Habitat Status	GWM	GWM	GWM	GWM
Available Old (ha)	0 / 16	0 / 16	Fire Salvage	4
Available Old/Mature (ha)	269 / 377	269 / 377	Fire Salvage	2032
Forest Cover Label	BS8414-12	BS(Pl)6306-16	BS(Pl)5307-18	FLH-5306-19
		Pl(bs06316-17	BS 8414-14	
Green-up of adjacent Block	N/A	N/A	Fire Salvage	N/A
Detailed Terrain Analysis	2000	2000	2003	2003
Flat Over Steep Analysis	N/A	N/A	2003	N/A
Soil Erosion Field Assessment	2000	2000	2003	N/A
Visual Impact Assessment	1999	1999	2003	N/A
Archaeological Impact	N/A	N/A	N/A	N/A
Avalanche Analysis	N/A	N/A	N/A	N/A
Pest Incidence Survey	N/A	N/A	N/A	N/A
Current Category Status	Approved	Approved	Proposed	Proposed
Change From Last Plan?	Minor	Minor	Yes	Yes

HARVEST SUMMARY TABLE

TSL	A72619	A70238	A70239	A70240
Composite Map Name	Burton	Burton	Burton	Burton
Map Reference	82F092	82F092	82F092	82F092
Geographic Location	Snow Creek	Snow Creek	Snow Creek	Snow Creek
Lat./Long.	49°56'/117°44'	49°57'/117°43'	49°57'/117°42'	49°57'/117°42'
Anticipated Sale Date	2004	2006	2006	2006
Gross Area (ha)	51.9	9.4	33.1	47.1
Wildlife Tree Patches (ha)	12.4	2.3	13.3	26.8
Other Reserves (ha)	N/A	N/A	N/A	N/A
Net Area to Reforest (ha)	35.5	6.6	18.3	17.5
Total Harvest Volume (m3)	20000	3343	8804	12800
Silviculture System	Clearcut	Clearcut	Clearcut	Clearcut
Harvest Method	Cable	Cable	Cable	Cable
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N521	N521	N521	N521
Mapped BEC	ICHmw2	ICHmw2	ICHmw2	ICHmw2
Natural Disturbance Type	2	2	2	2
Biodiversity Emphasis	Intermediate	Intermediate	Intermediate	Intermediate
Resource Management Zone	Arrow	Arrow	Arrow	Arrow
Watershed Name	N/A	N/A	N/A	N/A
Watershed Class	N/A	N/A	N/A	N/A
Proposed ECA % *	N/A	N/A	N/A	N/A
Riparian Classifications	S6/S2-Snow cr	S6/S2-Snow cr	S6/S2-Snow cr	S6/S2-Snow cr
Wildlife Habitat Status	GWM	GWM	GWM	GWM
Available Old (ha)	4	4	4	4
Available Old/Mature (ha)	2032	2032	2032	2032
Forest Cover Label	L(HCFPw)4307-18	FLCH(Pl)5307-19	FLHC-6306-16	FLH(C)-6306-18
Green-up of adjacent Block	N/A	N/A	N/A	SR
Detailed Terrain Analysis	2003	2003	2003	2003
Flat Over Steep Analysis	N/A	N/A	N/A	N/A
Soil Erosion Field Assessment	N/A	N/A	N/A	N/A
Visual Impact Assessment	N/A	N/A	N/A	N/A
Archaeological Impact	N/A	N/A	N/A	N/A
Avalanche Analysis	N/A	2001	2001	2001
Pest Incidence Survey	N/A	N/A	N/A	N/A
Current Category Status	Proposed	Approved	Approved	Proposed
Change From Last Plan?	Yes	Minor	Minor	Yes

HARVEST SUMMARY TABLE

TSL	**BR2**
Composite Map Name	Burton
Map Reference	82F091
Geographic Location	Burton face
Lat./Long.	49°57'/117°51'
Anticipated Sale Date	2004
Gross Area (ha)	75.2
Wildlife Tree Patches (ha)	16.4
Other Reserves (ha)	0.0
Net Area to Reforest (ha)	15.0
Total Harvest Volume (m3)	6000
Silviculture System	Select
Harvest Method	Cable
Harvest Season	Winter/Summer
Landscape Unit	N521
Mapped BEC	ICHmw2
Natural Disturbance Type	2
Biodiversity Emphasis	Intermediate
Resource Management Zone	Arrow
Watershed Name	Burton Face
Watershed Class	1
Proposed ECA % *	
Riparian Classifications	S6
Wildlife Habitat Status	UWR **
Available Old (ha)	4
Available Old/Mature (ha)	2032
Forest Cover Label	LFHC 6306-17
Green-up of adjacent Block	N/A
Detailed Terrain Analysis	Required
Flat Over Steep Analysis	N/A
Soil Erosion Field Assessment	Required
Visual Impact Assessment	Required
Archaeological Impact	N/A
Avalanche Analysis	N/A
Pest Incidence Survey	N/A
Current Category Status	Proposed/Approved
Change From Last Plan?	Yes

** BR2 is a partial cut retaining > 40% Basal Area. This is consistent with UWR management within the KBLUP-IS.

APPENDIX B ENGINEERING ACCESS MANAGEMENT TABLE - BCTS 2001-2006 Forest Development Plan-Arrow TSA/TFL 23, Amendment #9
Submission for Review and Comment

Map Reference	FSR# 11250-30 Name or TSL#	Branch Spur	Primary Respons.	Type of Road	Length/ Location Nearest 0.1Km	Current Access Level	Type/Year Works Proposed			Proposed Access Level	Bridges & Culverts over 2000mm	Terrain Stability Field Assess.	Cultural/Heritage Archeological Impact Assessment	Visual Impact Assess.	Surface Soil Erosion Assess.	Stream/Wetland Lake Riparian Class	Develop. Status
							C	M	D								
College	A72332	CCR-01	BCTS	Temp	0.3	NC	2004		2005	DT	N/A	required	N/A	required	N/A	N/A	proposed
College	A72332	CCR-02	BCTS	Temp	0.3	NC	2004		2005	DP	N/A	required	2004	N/A	2004	S-3	proposed
Ymir	YMR-03/A60030-2	branch	BCTS	Temp	3	NC	2004		2007	DT	N/A	required	required	required	N/A	S-6	proposed
Winlaw	WIR-01	branch	BCTS	Perm	2.9	NC	2004			DT	N/A	N/A	N/A	required	N/A	S-6	proposed
	WIR-02	branch	BCTS	Perm	6.1	NC	2004			DT	N/A	required	required	required	N/A	S-2 & 3	proposed
	WIR-03	branch	BCTS	Perm	6.2	NC	2004			DT	N/A	required	required	required	N/A	required	proposed
	WIR-04	spur	BCTS	Perm	1.2	NC	2004			DT	N/A	required	required	required	N/A	N/A	proposed
	WIR-05	spur	BCTS	Perm	0.8	NC	2004			DT	N/A	required	required	required	N/A	N/A	proposed
	Pedro-Sproule conn.		BCTS	Perm	0.4	NC	2004			2x4	N/A	N/A	required	N/A	N/A	N/A	proposed
	Pedro	spur 400	Slocan		0+600				2004	DP	N/A	required	N/A	N/A	N/A	N/A	proposed
	Pedro	spur 400	Slocan	Perm	1+500-4+300			2004		2X4	N/A	required	required	N/A	N/A	N/A	proposed
Burton	A65389-2	spur 1	BCTS	Temp	0.4	NC	2004			2x4	N/A	2001	N/A	2000	2001	N/A	Minor change
	A65389-3	Branch 3	BCTS	Perm	4.1	NC	2004			2x4	N/A	2004	N/A	2004	2004	S4	proposed
	A65389-3	Spur A	BCTS	Perm	1.2	ATV		2004		2x4	N/A	2004	N/A	2004	2004	N/A	proposed
	A65389-3	Spur M	BCTS	Perm	1	NC	2004			2x4	N/A	2004	N/A	2004	2004	S4	proposed
	A65389-3	Stub M	BCTS	Perm	0.3	NC	2004			2x4	N/A	2004	N/A	2004	2004	N/A	proposed
	A70237	Spur 7A	BCTS	Temp	0.5	NC	2004			2X4	N/A	2003	N/A	N/A	N/A	S6	proposed
	A72619	Spur 1	BCTS	Temp	0.6	NC	2004			2X4	N/A	2003	N/A	N/A	N/A	N/A	proposed
	A70240	Spur 200	BCTS	Perm	1.8	NC	2005			DT	N/A	required	N/A	N/A	N/A	S6	proposed

Appendix 7.1.6 Table F

ECA's for Domestic Watersheds Where Development is Proposed.

Map Sheet	Name	Total Area	Existing ECA%	Proposed harvesting Area (ha)	Proposed ECA%	Report Card Submission Date if Required
Winlaw	Trozzo Creek	2773	23.9	16	24.3	N/A
Winlaw	Winlaw 1	4014	5.3	193	12.1	N/A
Winlaw	Pedro Creek	1673	17.9	96	25.9	N/A
Winlaw	Winlaw-Pedro Face	539	0.0	66.0	11.0	N/A
Burton	Summer Creek	158.5	62%	52.8	71.0	N/A
Burton	Burton Face	759	26.9	11.0	28.3	N/A

Notes:

- Summer Creek ECA was calculated using the weighted method. The unweighted ECA is 62%.

7.1.11 Appendix J – Forest Practices Varances:

Cutblock ID	Act, Regulation, HLP Reference	Variance & Rationale
YM-11 A60001 WI-15 A65389-3	OSPR 11(3)(b)(i)(A) (max cutblock size)	These cutblocks are greater than 40 hectares in size. The proposed harvesting is to recover timber that was damaged by Mountain Pine Beetle or Wildfireand, wherever possible, the cutblock will incoprorate structural characteristics of natural disturbance.
BR-2	OSPR 11(3)(b)(i)(B) (max cutblock size)	These cutblocks are greater than 40 hectares in size. A partial cut silviculture system, other than clearcut or seedtree, will be used and 40% or more of the pre-harvest basal area will be retained in a uniform distribution throughout the cutblock.
A65404 A72332	OSPR 11(3)(b)(i)(A) (max cutblock size) THPR 6(2)(g) (harvesting adjacent to non-greened-up cutblock)	These cutblocks are proposed adjacent to previously harvested non-greened-up area creating a patch size greater than 40 hectares. The proposed harvesting is to recover timber that was damaged due to Mountain Pine Beetle and/or blowdown, wherever possible, the cutblock to be harvested will incorporate structural characteristics of natural disturbance.

BRITISH
COLUMBIA

File: 10765-25 2001 FDP

May 3, 2004

Jim Guido, R.P.F.
Acting District Manager
Arrow Boundary Forest District
845 Columbia Avenue
Nelson BC V1N 1H3

Dear Sir:

The British Columbia Timber Sales program is submitting Major Amendment #9 to the BCTS Forest Development Plan 2001-2006 in the Arrow Boundary Forest District. This amendment will be available for review and comment after May 3, 2004.

We are submitting Amendment #9 for the salvage of burnt timber associated with the Mt. Marshall Fire near Burton. We have requested an advertising period of 21 days for this block to ensure that prompt salvage will be undertaken. The advertising period for the Mt. Marshall fire will end on May 25, 2004.

Amendment #9 also addresses the salvage and control of Mountain Pine Beetle in the Winlaw and Ymir operating areas, and salvage of blowdown timber in the College operating area. The remainder of the amendment is to address new harvesting opportunities scattered throughout the district, as well as changes in block shapes of previously approved blocks. The advertising period for areas outside of the Mt. Marshall Fire will end on July 2nd, 2004.

This amendment is available for public and interagency review by contacting Sandi Best, BCTS Planning Forester at the Kootenay Lake Forestry Centre, 1907 Ridgewood Road, Nelson, BC V1L 6K1 or by telephoning 250-825-1100.

Ministry of Forests

BC Timber Sales
Kootenay Business Area, Nelson

Location:
1907 Ridgewood Road, Nelson

Mailing Address:
1907 Ridgewood Road
Nelson BC V1L 6K1

Tel: (250) 825-1100
Fax: (250) 825-9657

Additionally, a public open house is scheduled for May 19th at the Winlaw Hall from 2pm to 8pm, and a copy of this amendment is being made available on the Ministry of Forests' ftp site at:
http://www.for.gov.bc.ca/ftp/TKO/external/!publish/FDP_Amendment_9

Yours truly,

Sandi Best, M.Sc., RPF
BCTS Planning Forester

Attachment(s): Amendment #9

BRITISH
COLUMBIA

File: 10765-25/2001 FDP

August 9, 2004

Larry Peitzsche, R.P.F.
District Manager
Arrow Boundary Forest District
845 Columbia Avenue
Nelson BC V1N 1H3

Dear Sir:

The British Columbia Timber Sales program is submitting for approval Major Amendment #9 to the BCTS Forest Development Plan 2001-2006 in the Arrow Boundary Forest District. This amendment was available for review and comment from May 3, 2004.

This amendment is to facilitate the salvage of blowdown and beetle infested timber in our Burton, College, Winlaw and Ymir operating areas. We allowed a full 60 day advertising period ending on July 2. Section 7.1.14 - Appendix M in our attached submission lists the changes made as a result of agency and public comments received during this review period. As well, copies of the letters received, along with our responses, are included in this package.

If you require further clarification on any matter, please contact the undersigned at the Kootenay Timber Sales Office in Nelson at 250-825-1138.

Yours truly,

Sandi Best, M.Sc., R.P.F.
Planning Forester

Attachment(s): Amendment #9

Ministry of Forests

BC Timber Sales
Kootenay Business Area, Nelson

Location:
1907 Ridgewood Road, Nelson

Mailing Address:
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Nelson BC V1L 6K1

Tel: (250) 825-1100
Fax: (250) 825-9657

BC Timber Sales - ARROW TSA
2001-2006 FOREST DEVELOPMENT PLAN
MAJOR AMENDMENT

Arrow Boundary Forest District, Arrow Timber Supply Area

Map Sheets: Burton Operating Area
College Operating Area
Winlaw Operating Area
Ymir Operating Area

Initial Submission Date: **May 3, 2004**

Resubmission Date: **August 9, 2004**

Final Approval Date: **August 13, 2004 (anticipated)**

Amendment: # 9 is a voluntary amendment to an Operational Plan as described under Section 34(1) of the *Forest Practices Code of British Columbia Act.*

The following sections of the 2001 FDP have been amended:

• **Section 1**	Table 2 Referral Summary
• **Section 3.2.2**	Old and Mature Forest and Regional Connectivity
• **Section 3.2.5**	Maximum Cutblock Size, Green-up and Patch Size
• **Section 3.3**	Measures to Protect Forest Resources: Water
• **Section 3.5**	Measures to Protect Forest Resources: Riparian Management
• **Section 3.6**	Measures to Protect Forest Resources: Ungulate Winter Range
• **Section 3.8**	Measures to Protect Forest Resources: Visual Landscape Management
• **Section 3.13**	Measures to Protect Forest Resources: Terrain Stability
• **Section 7.1.1**	Appendix A - Harvest Summary Table
• **Section 7.1.2**	Appendix B - Road Construction, Modification, and Assessment Table
• **Section 7.1.6**	Appendix F - ECA's for Domestic Watersheds where Development is Proposed.
• **Section 7.1.11**	Appendix J Forest Practices Variances
• **Section 7.1.12**	Appendix K Advertisements
• **Section 7.1.13**	Appendix L Referrals, Correspondence and Review Comments
• **Section 7.1.14**	Appendix M Summary of Changes from Initial Plan Preparation
• **Section 7.1.16**	Mapsheets: Burton, College, Winlaw, and Ymir Operating Areas

Amendment Rationale:

This amendment is required to update and add the following items to the Forest Development Plan:

1. Add new blocks and roads to access timber for control of pests, salvage of timber damaged as a result of blowdown, and normal harvesting operations.
2. Blocks previously approved need updating and approval as a result of changes due to layout and assessment work.

Mapsheet	TSL # or Pre#	Nature of Amendment	Comments
Burton	A68108 (BR-2)	Increase in block size	To address total chance
Burton	A70237	Block shape and access changed	To address total chance
Burton	A70240	Block reconfiguration	To address total chance
Burton	A72619	New Block	To address total chance
Burton	A65389-1	Minor Amendment	Shown to be consistent with internal minor amendment.
Burton	A65389-2	Minor Amendment	Shown to be consistent with internal minor amendment
Burton	A70238	Minor Amendment	Shown to be consistent with internal minor amendment
Burton	A70239	Minor Amendment	Shown to be consistent with internal minor amendment
Winlaw	A59996-13	Change in block size	To address mountain pine beetle
Winlaw	A60001	Change in block size	To address mountain pine beetle
Winlaw	A73443 (WI-15)	New Block	To address mountain pine beetle
Winlaw	A59997	Minor Amendment	Shown to be consistent with internal minor amendment
Winlaw	A59998	Minor Amendment	Shown to be consistent with internal minor amendment
Winlaw	A60000	Minor Amendment	Shown to be consistent with internal minor amendment
College	A65404	New Block	To address mountain pine beetle
College	A72332	New Block	To address blowdown
Ymir	A60030-1 (YM-11)	New Block	To address mountain pine beetle

Section 1 Table 2 Referral Summary

Activity	Date (yyyy/mm/dd)	Location (and media with respect to Public Review	Comments Received (Y/N)	Date (yyyy/mm/dd)
Submission of Amendment 9				
Ministry of Forests	2004/05/03	Arrow Boundary Forest District	Y	2004/05/20
Public Review				
Advertising	2004/04/28	The Valley Voice	N	
(Date of first publication)	2004/04/30	Arrow Lakes News	N	
	2004/04/29	The Nelson Daily News	N	
	2004/04/30	The West Kootenay Weekender	N	
	2004/04/30	The Castlegar Citizen	N	
Open House	2004/05/19	Winlaw Hall, Winlaw BC	Y	Various
Deadline for Comments	**2004/07/02**			
Referral Letters:				
Agencies:				
Land & Water BC, Cranbrook	2004/04/28		N	
Mike Knapik, WLAP, Nelson	2004/04/28		N	
Dave Smith, MoTH, Nelson	2004/04/28		Y	2004/05/20
First Nations:				
See list in Appendix L	2004/04/28		N	
Affected Stakeholders:				
Trappers	2004/04/28		N	
Water License Holders	2004/04/28		Y	Various
Final Submission for Approval (if necessary)	2004/08/09	Arrow Boundary Forest District		
Anticipated Approval Date	**2004/08/13**			

Section 3.2.2 Old and Mature Forest and Regional Connectivity

Timber Sale A74334 by Donut Lake (in the Winlaw Operating Area) has been modified since our initial submission based on additional field layout. The block boundary originally encroached into a proposed Old Growth Management Area (OGMA). The new block shape and location no longer overlaps with the OGMA.

Objectives for the distribution of old and mature-plus-old seral stages are established in the Kootenay Boundary Higher Level Plan (KB-HLP). All harvest blocks proposed within this amendment have been assessed against the availability of forest cover age classes to ensure achievement of seral stage targets for each Landscape Unit. The old and old/mature numbers shown in Section 7.1.1. Appendix A - Harvest Summary Table indicate that we are consistent with this KB-HLP objective.

Section 3.2.5 Maximum Cutblock Size, Green-up and Patch Size

Several cutblocks proposed in this amendment exceed the 40 hectare maximum cutblock size specified in the Operational and Site Planning Regulation, Section 11. Blocks A60030-1 (YM 11), A60001, A74334 (WI-15), A65404 and A72332 are proposed to recover timber damaged by blowdown or mountain pine beetle will incorporate structural characteristics of natural disturbance. Cutblock A68108 (BR-02) is proposed as a cable select block resulting in a net area to reforest of 15 hectares (approximately 20% removal).

Section 7.1.11 Appendix J Forest Practices Variances has been included with this amendment to address maximum cutblock size.

Section 3.3 Measures to Protect Forest Resources: Water

Community Watersheds:
Within this FDP amendment, harvesting is proposed within two community watersheds – Blueberry Creek and China Creek. Blueberry Creek had an IWAP update completed in fall 2003. Amendment #9 is consistent with the results and recommendations of this update.

The Arrow Boundary Forest District Manager has approved an IWAP Exemption for China Creek under section 14(3) of the Operational and Site Planning Regulation. Several conditions were placed on this IWAP exemption as outlined below:

1. Meet with the water representatives to brief them on the salvage proposal:
   After numerous attempts to contact both the Water User Community and the Genelle Improvement District, we were finally able to discuss these plans in late July and early August. A July 29th discussion with Diane Nye, spokesperson for the China Creek Water User Community, identified that they had no concerns with our plans for salvage and they did not wish to have a meeting. A voice message from the Genelle Improvement District on August 4th indicated that they had received our referral letter of April 28, 2004, and that they had no comment or concerns regarding our harvest plans.
2. Terrain Stability Field Assessment (TSFA) and Soil Erosion Field Assessment (SEFA) be completed for the salvage area:
   These assessments have been completed by Sitkum Consulting Ltd. Our proposed development is consistent with the results and recommendations presented in these reports.

The following table shows the proposed development within Community Watersheds.

Community Watershed	Proposed Harvest	Hectares
China Creek	A72332 (Blowdown)	7.2
Blueberry Creek	A65404 (Mountain Pine Beetle)	1.8

Domestic Watersheds:

- Winlaw Operating Area:

Summit Environmental Consultants Ltd. has reviewed this proposed Amendment 9 against the existing Interior Watershed Assessment Procedures (IWAPs) for Trozzo, Winlaw and Pedro Creeks. It is their opinion that our development is consistent with the results and recommendations presented in these reports. A copy of this hydrology assessment has been provided to the Arrow Boundary Forest District under separate cover.

The Summit Hydrology Assessment evaluated the overall risk of harvesting and road building to peak flows and water supply for all domestic watersheds and face units affected by proposed harvesting in the Winlaw Operating Area. This report indicated that the risks associated with this development are low to moderate with specific recommendations for those areas of moderate risk.

Post-harvest of all proposed blocks, the ECA of the residual basin in Trozzo Creek will be 29.4%. The recommended ECA in the IWAP is 30%. We have commissioned Summit Environmental Consultants to update the IWAP for Trozzo Creek this summer.

A Contingency Plan for Domestic Watersheds in the Winlaw Operating Area has been completed and supplied to the Arrow Boundary Forest District under separate cover.

- Burton Operating Area:

Timber Sale A68108 (BR-2) is located within the Burton Face class 1 domestic watershed. This block is designed for cable select with a net area removal of 15 hectares (approximately 20% removal). This represents an ECA increase of 0.5%. The proposed ECA following the Mt. Marshall Fire salvage is 8.6% resulting in an overall ECA total of 9.2% for this face unit.

Equivalent clearcut areas, ECA's, have been updated for blocks which fall within domestic consumptive watersheds. An updated ECA Table in shown in Appendix 7.1.6 Table F.

Section 3.5 Measures to Protect Forest Resources: Riparian Management

Based on size, Donut Lake is considered an "L3" for riparian management. Our original FDP of 2001 commits to treating all lakes within the Arrow Boundary Forest District as "L1" for riparian management. Our development at Donut Lake has been moved away from the lakeshore boundary and the site plan will ensure that riparian management will be consistent with the L1 classification.

Section 3.6 Measures to Protect Forest Resources: Ungulate Winter Range

Timber Sale 68108 (BR-2) is located within an Ungulate Winter Range polygon. This block is identified as cable select with a retention level greater than 40% an equating to a net area of 15 hectares. This prescription is consistent with the KB-HLP for Ungulate Winter Range management.

Section 3.8 Measures to Protect Forest Resources: Visual Landscape Management

A Visual Impact Assessment has been completed from the designated viewpoints along Highway 3 through the Slocan Valley. The Visual Quality Objective (VQO) of retention has been achieved for the blocks at Pedro Creek (A74334) and Trozzo Creek (A60001 & A59996-13). In addition, these cutblocks are designed as pine removal with minor other species removal to facilitate harvesting and regeneration. Where-ever possible, these blocks will incorporate structural characteristics of natural disturbance

Section 3.13 Measures to Protect Forest Resources: Terrain Stability

Where terrain stability field assessments, flat over steep assessments, or soil erosion field assessments are completed, planned developments are consistent with the results and recommendations. For areas in Section 7.1.1 Appendix A – Harvest Summary Table where terrain stability assessments are shown as completed, the development is consistent with the results and recommendations of these reports.

BC Timber Sales commits to completing the following assessments, prior to road permit approval, or signing of a site plan:

1. For road WIR-02 complete a terrain stability field assessment (TSFA), and a soil erosion field assessment (SEFA). The recommendations from these assessments will be incorporated into the road lay-out/design and subsequent road permit.

2. For TSL A59996-13, complete a block TSFA, a block SEFA, and a flat/steep assessment.

Once prepared, BCTS is will make these assessments available to the public groups who have expressed interest in reviewing this information (i.e. the Winlaw Watershed Committee). This will be via the FTP site.

Section 7.1.2 Appendix B - Road Construction, Modification, and Assessment Table

Comments have been received from the Arrow Boundary and Kootenay Lake Forest Districts, as well as the public regarding the Pedro-Smallwood Connector road. This connector is necessary to facilitate harvesting during the winter as the Pedro Creek is steep with many switchbacks. We also recognize the hunting implications with a loop road joining these two drainages. It is our intention to deactivate this connector on the Spur 400 road at 3+300 (approximately 1 km east of Donut Lake).

The Arrow Boundary District has expressed concern regarding the proposed access into College Creek (re: spur CCR-02). This route is proposed as the route from the west is not feasible due to the difference in elevation. Access from the west would require adverse roads and switchbacks which would preclude hauling.

Section 7.1.6 Appendix F - ECA's for Domestic Watersheds where Development is Proposed.

ECA's for Domestic Watersheds Where Development is Proposed.

Map Sheet	Name	Total Area	Existing ECA%	Proposed Harvesting Area (ha)	Proposed ECA%	Report Card Submission Date if Required
Winlaw	Trozzo Creek	2780.4	16.8	127.0	21.4	N/A
Winlaw	Winlaw	4014.7	3.1	280.2	10.1	N/A
Winlaw	Pedro Creek	1722.6	21.4	30.6	23.2	N/A
Winlaw	Pedro Face	552.3	2.8	69.9	15.4	N/A
Winlaw	Dumont Creek	726.5	10.1	14.5	12.1	N/A
Burton	Burton Face	266.7	8.6	25.0	9.8	N/A

Notes:

- The column with Proposed Harvesting Area includes all cutblocks yet to be harvested as shown on the FDP maps.

Section 7.1.11 Appendix J Forest Practices Variances

Cutblock ID	**Act, Regulation, HLP Reference**	**Variance & Rationale**
A60030-1(YM-11) A60001 A74334 (WI-15)	OSPR 11(3)(b)(i)(A) (max cutblock size)	These cutblocks are greater than 40 hectares in size. The proposed harvesting is to recover timber that was damaged by Mountain Pine Beetle and, wherever possible, the cutblock will incorporate structural characteristics of natural disturbance.
BR-2 (A68108)	OSPR 11(3)(b)(i)(B) (max cutblock size)	This cutblock is greater than 40 hectares in size. A partial cut silviculture system, other than clearcut or seedtree, will be used and 40% or more of the pre-harvest basal area will be retained in a uniform distribution throughout the cutblock.
A65404 A72332	OSPR 11(3)(b)(i)(A) (max cutblock size) THPR 6(2)(g) (harvesting adjacent to non-greened-up cutblock)	These cutblocks are proposed adjacent to a previously harvested non-greened-up area creating a patch size greater than 40 hectares. The proposed harvesting is to recover timber that was damaged due to Mountain Pine Beetle and/or blowdown and, wherever possible, the cutblock will incorporate structural characteristics of natural disturbance.

Section 7.1.12 Appendix K Advertisements

BC Timber Sales Arrow TSA Amendment #9 has been advertised on the Official Notices website and local newspapers including the Arrow Lakes News, Castlegar Citizen, Nelson Daily News, Pennywise, The Valley Voice and the West Kootenay Weekender. Copies of the advertisements are included in this amendment.

The text and appendices of this FDP have also been published on the BC Timber Sales - Kootenay ftp site (http://www.for.gov.bc.ca/ftp/TKO/external/!publish/FDP_Amendment_9).

Section 7.1.13 Appendix L Referrals, Correspondence and Review Comments

Referral letters have been sent to a number of individuals, licensed resource users, First Nations, government agencies, and organized groups. Copies of the referral letters sent, along with their mailing lists, are included with this amendment.

Proposed harvest plans in the Winlaw Operating Area were presented to the Winlaw Watershed Committee in March, 2004 and to the general public at an Open House held in the community of Winlaw on May 19th from 2 to 8 pm. The sign-in sheets are included with this submission.

In addition, the plan has been available for review by appointment in Castlegar. Comments and responses to this submission that were received during the review and comment period included in our package.
The Ministry of Transportation responded by stating they had no concerns with the proposed development. A copy of this letter is included with this submission.

Comments were received from Ministry of Forests, Arrow Boundary Forest District. This resubmission addresses the issues raised. A copy of the correspondence is included with this amendment.

Section 7.1.14 Appendix M Summary of Changes from Initial Plan Preparation

The following table identifies the items changed since the initial submission as a result of public and agency comments. Additional items have been updated in Section 7.1.1 Appendix A – Harvest Summary Table and Section 7.1.2. Appendix B – Road Construction, Modification and Assessment Table as a result of additional field work which appear in **bold** text.

A74334 (WI-15)	The block has been redesigned and moved away from Donut Lake. It was brought to our attention at the Public Open House in Winlaw that this lake is stocked and that the stream exiting the lake also has fish presence. At this time, the stream classification has not been confirmed, but our map has been updated to reflect the potential for fish.
Spur 400 location of permanent deactivation	Public concern was raised regarding the historical use of Donut Lake by the residents near Pedro Creek. Our initial deactivation site would preclude access from the Pedro side. We have since moved the deactivation point approximately 1 km east of Donut Lake. This new location has been supported by the Ministry of Water, Land and Air Protection due to the loop road situation, and their hunting closure on the Smallwood side of the connector.

Section 7.1.16 Mapsheets:

1 Burton Operating Area
2 College Creek Operating Area
3 Winlaw Operating Area
4 Ymir Operating Area

(Mapsheets located behind next tab section)

To the best of my knowledge, the proposed amendment meets the requirements of the Forest Practices Code of British Columbia Act (FPCA), the regulations, and the instructions to the Arrow Boundary District Licensees with regards to FDP standards. I request that you review Amendment #9 and if it meets with your satisfaction, that you give effect to this amendment in accordance with Section 41 (1) of the FPC of BC Act.

Certified By:

Register Professional Forester (R.P.F.)

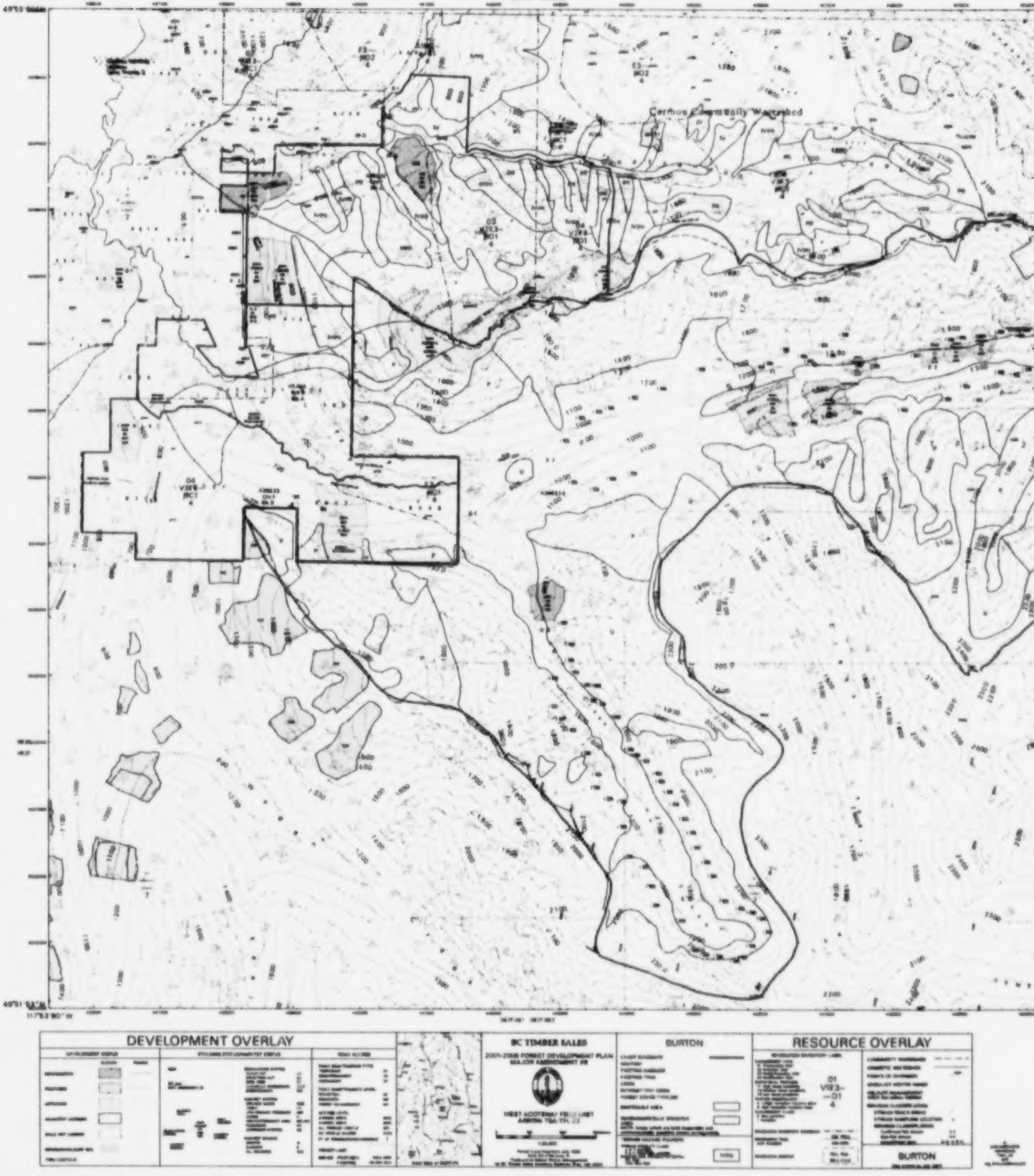
Date: ____________________

Approved By:
Section 41(1) of the FPC of BC Act

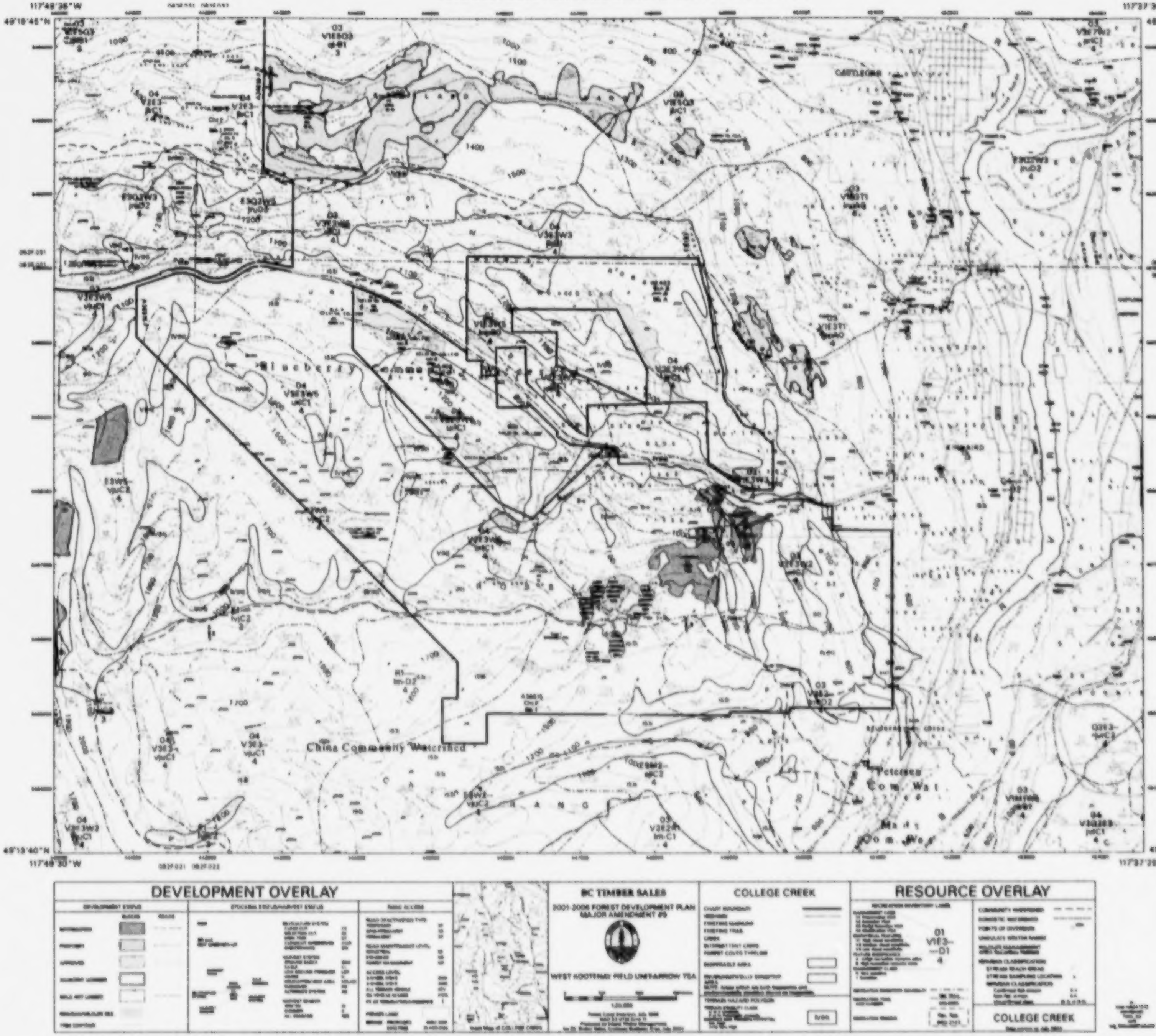
District Manager
Or Authorized Person

Date: ____________________

BCTS 2001-2006 FDP, MAJOR AMENDMENT #9-ARROW TSA/TFL 23


Caribou Community Watershed
DEVELOPMENT OVERLAY
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
MAJOR AMENDMENT #9
WEST KOOTENAY FIELD UNIT
ARROW TSA/TFL 23
BURTON
RESOURCE OVERLAY
BURTON

BCTS 2001-2006 FDP, MAJOR AMENDMENT #9-ARROW TSA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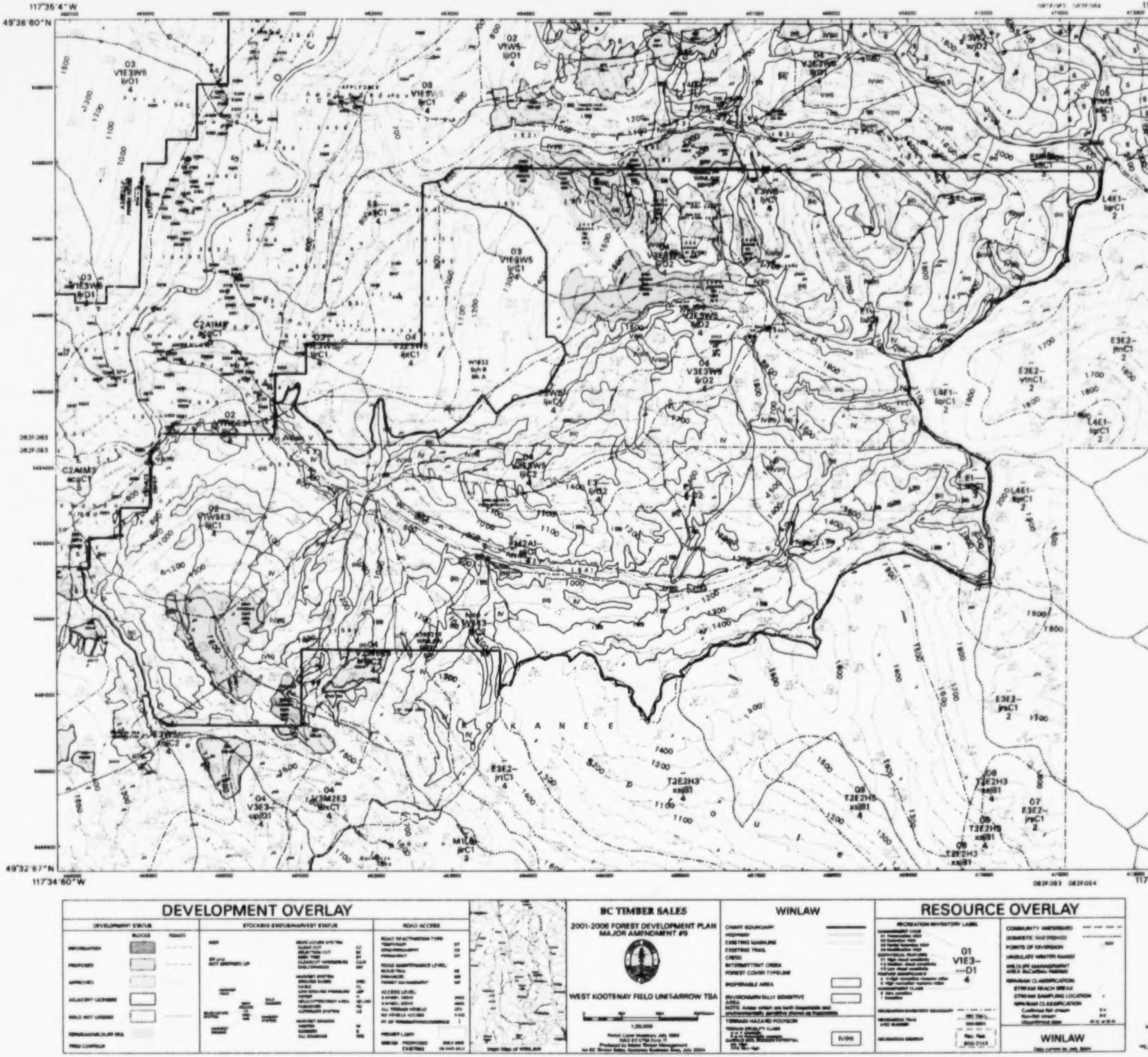
117°37'25" W
082F.021
082F.022
CASTLEGAR
Blueberry
China Community Watershed
Petersen
Com. Wat.
Mady
Dom. Wat.
RANGE
DEVELOPMENT OVERLAY
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
MAJOR AMENDMENT #9
WEST KOOTENAY FIELD UNIT-ARROW TSA
1:20,000
COLLEGE CREEK
CHART BOUNDARY
TERRAIN HAZARD POLYGON
RESOURCE OVERLAY
01
V1E3-
—D1
4
COLLEGE CREEK

BCTS 2001-2006 FDP, MAJOR AMENDMENT #9-ARROW TSA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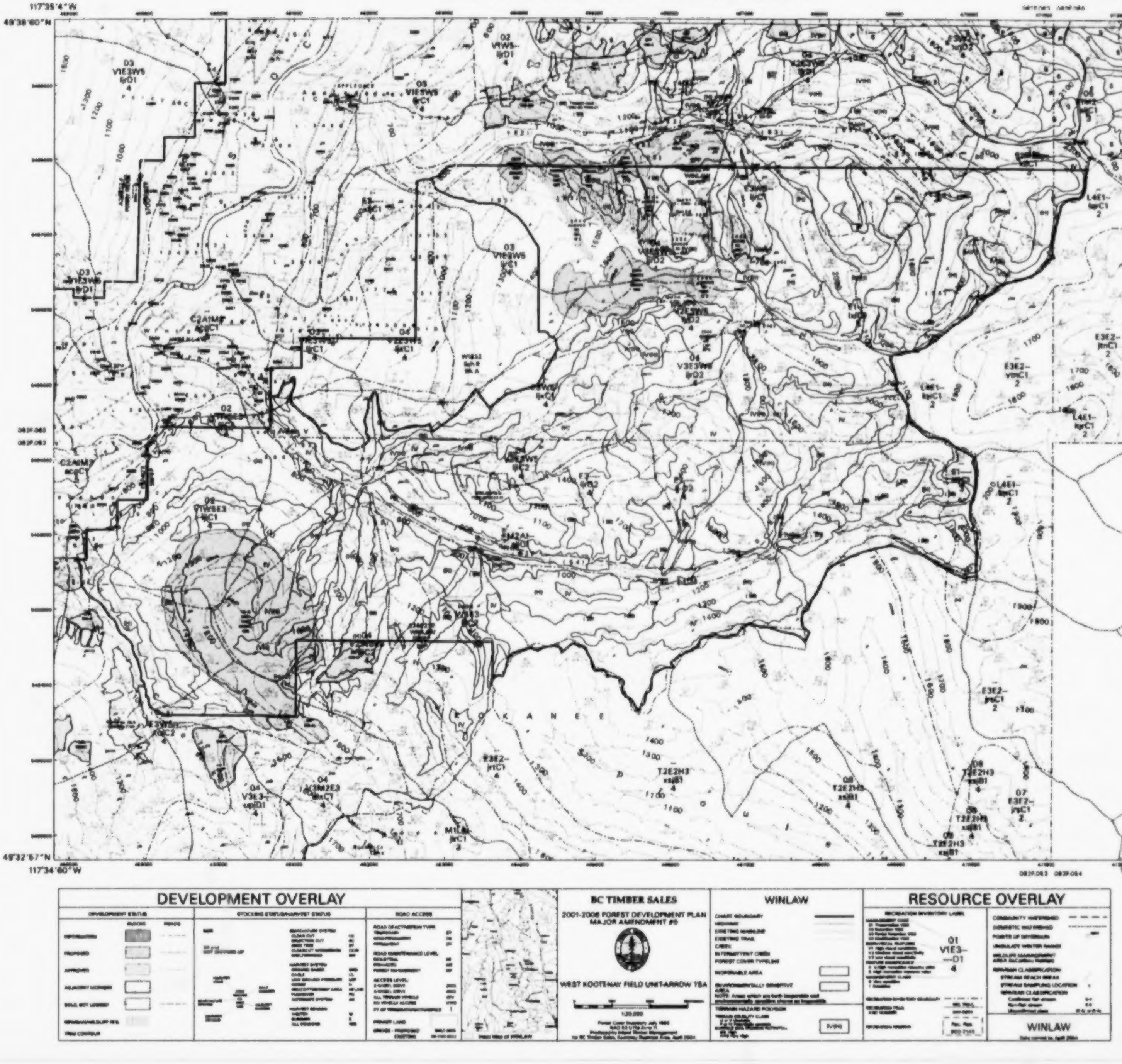
117°22'67"W
082F.083
082F.084
K O K A N E E
DEVELOPMENT OVERLAY
DEVELOPMENT STATUS
STOCKING STATUS/HARVEST STATUS
ROAD ACCESS
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
MAJOR AMENDMENT #9
WEST KOOTENAY FIELD UNIT-ARROW TSA
1:20,000
WINLAW
RESOURCE OVERLAY
01
V1E3-
--D1
4
IV(III)
WINLAW

BCTS 2001-2006 FDP, MAJOR AMENDMENT #9-ARROW TSA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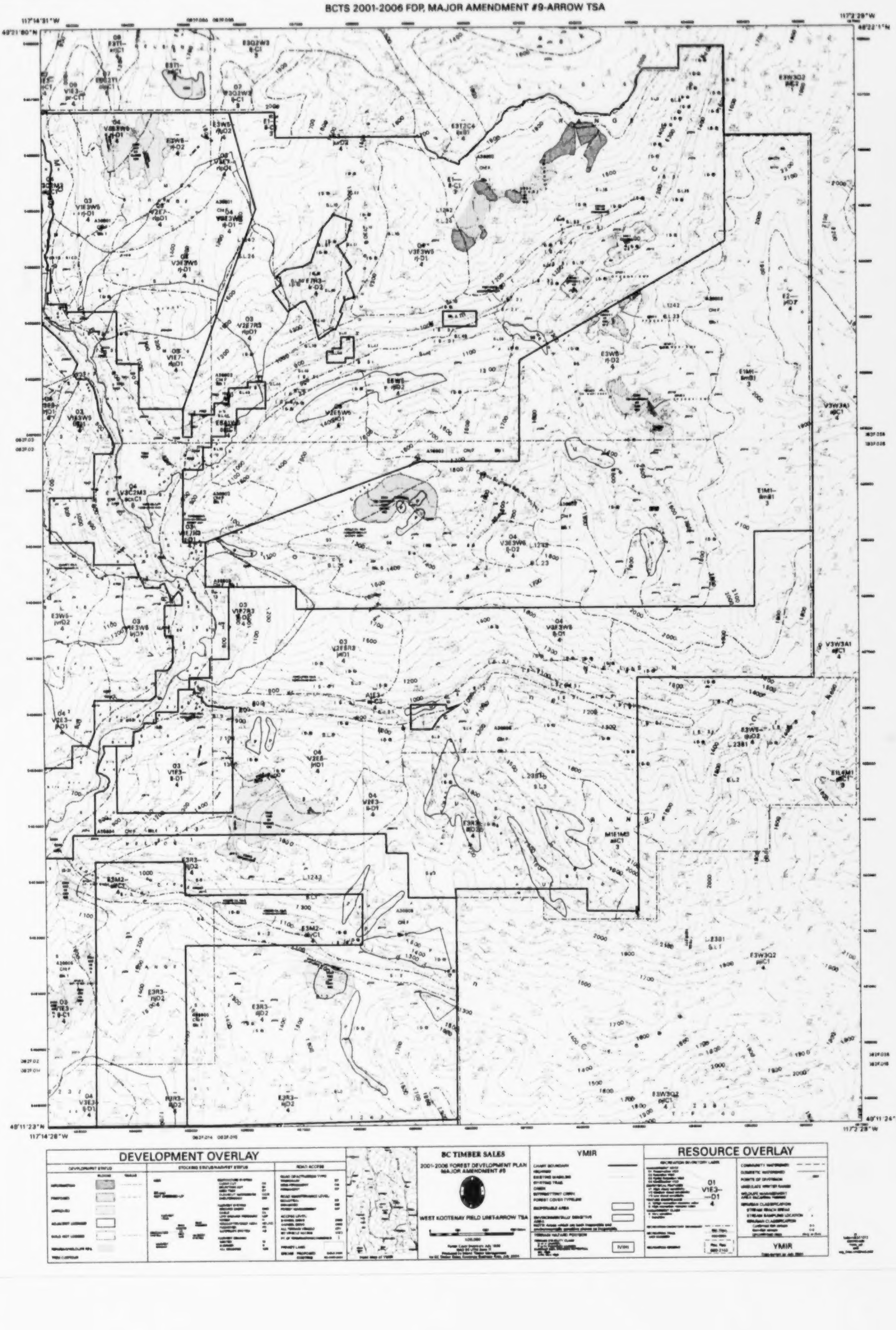
082F.063
082F.064
K O K A N E E
DEVELOPMENT OVERLAY
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
MAJOR AMENDMENT #9
WEST KOOTENAY FIELD UNIT-ARROW TSA
1:20,000
WINLAW
RESOURCE OVERLAY
01
V1E3-
D1
4
IV(H)
WINLAW

BCTS 2001-2006 FDP, MAJOR AMENDMENT #9-ARROW TSA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49°11'24"N
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117°2'28"W
DEVELOPMENT OVERLAY
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
MAJOR AMENDMENT #9
WEST KOOTENAY FIELD UNIT-ARROW TSA
YMIR
RESOURCE OVERLAY
01
V1E3-
-D1
4
YMIR

Review and Comment / Documentation and Referral

LIST OF REFERRAL LETTERS:

- Trappers

- First Nations:

Ray Warden, Manager
Treaty, Land and Resource
Ktunaxa/Kinbasket Tribal Council
#7468 Mission Road
Cranbrook, BC V1C 7E5

Pauline Terbasket, Administrative Director
Okanagan Nation Alliance
3255-C Shannon Lake Road
Westbank, BC V4T 1V4

Wayne Terbasket, Natural Resource Coordinator
Lower Similkameen Indian Band
P.O. Box 100
Keremeous, BC V0X 1N0

Kristy Craske, Executive Assistant
Natural Resource Department
Oakanagan Indian Band
RR #7
Vernon, BC V1T 7Z3

Joe McInnis, Forestry Manager
Osoyoos Indian Band
RR #3, Site 25, Comp 1
Oliver, BC V0H 1T0

Greg Gabriel
Penticton Indian Band
RR #2, Site 80, Comp 19
Penticton, BC V2A 6J7

Phillippe Batini, Band Manager
Upper Simikameen Indian Band
P.O. Box 310
Keremeous, BC V0X 1N0

Mickey Werstiuk, Forestry
Westbank First Nation
#310 - 515 Highway 97 South
Kelowna, BC V1Z 3J2

Loretta Eustache, Natural Resource Coordinator
Spallumcheen Indian Band
P.O. Box 460
Enderby, BC V0E 1V0

- Government Agencies:

Mike Knapik, Ecosystem Biologist
Ministry of Water, Land and Air Protection
#401-333 Victoria Street
Nelson, BC V1L 4K3

Robin Fawcett,
Manager,Commercial Rec.
1902 Theatre Road
Cranbrook, BC V1C 7G1

Dave Smith
Regional Avalanche Technician
4th Floor 820 Nelson Ave
Nelson, BC V1L 5S4

- Community Watershed Groups:

BLUEBERRY CREEK IRRIGATION DISTRICT
202A BERESFORD AVE
CASTLEGAR BC
V1N 4H2

Caribou Creek Community Watershed
C/O Art Townsend, Burton Water Board
#103 Burton Loop Road
Burton BC, V0G 1E0

BC HYDRO & POWER AUTHORITY
PWR SUPPLY RESOURCE MGMT
6911 SOUTHPOINT DR (E15)
BURNABY BC V3N4X8

CHINA CREEK WATERWORKS
GENELLE IMPROVEMENT DISTRICT
BOX 82
GENELLE BC V0G1G0

CHINA CREEK WATER USERS COMMUNITY
C/O DIANE NYE
PO BOX 258
GENELLE BC V0G1G0

- Domestic Water License Holders:

ADAMIN RONALD E & CHERYL A
RR 1 SITE 19 COMP 37
WINLAW BC V0G 2J0

ANDERSON DAVID L & KAROLYN L
RR 1 COMP 5 SITE 12
SLOCAN PARK BC V0G 2E0

ARMSTRONG JOHN M
PO BOX 64
BURTON BC V0G 1E0

AVIS EUGENE ARNOLD
PO BOX 134
WINLAW BC V0G 2J0

AVIS TAMMY ANDREASCHUK JANICE & MILLER L
C/O LINDA MILLER
BOX 9
WINLAW BC V0G 2J0

AVIS VELMA N
GENERAL DELIVERY
WINLAW BC V0G 2J0

BARISOFF BILL & MARION M
PO BOX 143
WINLAW BC V0G 2J0

BAXTER JEREMY T
RR 1 SITE 19 COMP 39
WINLAW BC V0G 2J0

BERGNER HERMANN & BARBARA
BOX 155
BURTON BC V0G1E0

MCMULLEN WILLIAM L
BOX 61
BURTON BC V0G1E0

MCQUEEN SUSAN R
RR 1 GROUP 19 COMP 9
WINLAW BC V0G 2J0

MERRY KENNETH A & DORIT H
6206 MURCHIE ROAD
DUNCAN BC V9L 5Y4

MEYER DIANE
BOX 69
WINLAW B C V0G 2J0

MILES ROSEMARY J
PO BOX 168
WINLAW BC
V0G 2J0

MILLER ANITRA LANAE
PO BOX 745
ROSSLAND BC V0G 1Y0

MITCHELL DONALD E
BOX 125
BURTON BC V0G 1E0

NAYLOR SHANNON
O BOX 117
WINLAW BC V0G 2J0

NOAD JAMES B & SUZANNE
502 COLUMBIA AVE
CASTLEGAR BC V1N 1G7

BERLOW VOLKER HARRY
PO BOX 63
WINLAW BC V0G 2J0

BEVAN GEORGE F & JOAN D
BOX 61 5782 HWY 6
WINLAW BC V0G 2J0

BORTNICK MICHELLE
BOX 7
BURTON BC V0G 1E0

BROWN HARVEY LESTER
PO BOX 11
BURTON BC V0G 1E0

BULMAN ANNE LOUISA
5264 HIGHWAY 6
WINLAW BC V0J 2J0

CAMPOAMOR R D
1540 EUCLID AVENUE
BERKELEY, CA USA 94708

CANNON DOUGLAS E & NORMA
BOX 75
BURTON BC V0G1E0

CONNAUTON JOHN M & RUTH M
BOX 124
WINLAW BC V0G 2J0

CONSTANTIN CLAUDE ET AL.
SITE 19 COMP 20 RR 1
WINLAW BC V0G 2J0

CROSFIELD EDWARD B
RR 1 COMP 26 SITE 3
CASTLEGAR BC V1N 3H7

DELAURIER ADRIEN M
BOX 91
GENELLE BC V0G1G0

DONAHUE ROBERT J
BOX 106
WINLAW BC V0G 2J0

DOWES TIMOTHY J
PO BOX 118
WINLAW BC V0G 2J0

ERVEN PAUL A & LISA
PO BOX 72
WINLAW BC V0G 2J0

FARRER JAMES
BOX 102
WINLAW BC V0G 2J0

FARRER JAMES H
BOX 102
WINLAW BC V0G 2J0

NORTHWAY TRUCKING LTD
RR 1 SITE 1 COMP 5
SLOCAN PARK BC V0G 2G0

PARKER IRIS A & EARL G
BOX 153
WINLAW BC V0G 2J0

PATTERSON BEVERLY
OX 143
BURTON BC V0G 1E0

PATTERSON LOGGING LTD ET AL
BOX 6
SLOCAN BC V0G 2C0

PEASE ROSS W & BRENDA J
BOX 175
WINLAW BC V0G 2J0

PIPPEN DANIEL C & KATHLEEN
PO BOX 1373
PRINCETON BC V0X 1W0

PODOVELNIKOFF JEANETTE
RR 1 COMP 4 SITE 12
SLOCAN PARK BC V0G 2E0

POPOFF ANDY A JR & ELAINE
RR 1
WINLAW BC V0G 2J0

POPOFF ELI & ALICE
RR 1 GROUP 2 COMP 2
WINLAW BC V0G 2J0

PRO-TECH SURVEYS LTD
106 13423 78TH AVE
SURREY BC V3W 0A8

RICK MARKEN DEVELOPMENTS LTD
4185 KAYS ROAD
NELSON BC V1L 6P9

ROMAO GEORGE M
PO BOX 1956
BROOKS AB T1R 1C7

RUSSELL ANNE L
BOX 68
WINLAW BC V0G 2J0

SABAN ISAAC M & KHYA R
PO BOX 7
BURTON BC V0G 1E0

SCHILLER KEVIN M & NICOLE N
BOX 45
BURTON BC V0G 1E0

SCOTT JENNIFER A & NESBITT DUAYNE E
PO BOX 15
WINLAW BC V0G 2J0

GALLO JERRY R J & ARLEEN G
BOX 14 SITE 240 RR 3
BRANDON MB R7A5Y3

GAUTHIER JEAN
BOX 246
NELSON BC V1L 5P9

GEORGE'S EXCAVATING LTD.
BOX 188
SLOCAN BC V0G 2C0

GREEN TOM & JIM
GR 19 COMP 18 RR 1
WINLAW BC V0G 2J0

GRIMMETT LILY B MRS
BOX 19
BURTON BC V0G 1E0

HALL KENNETH R
PO BOX 198
ROBSON BC V0G 1X0

HARASEMOW JOHN P & MARY
RR 1
WINLAW BC V0G 2J0

HEIMANN MARY M
RR 3 SITE 12 COMP 4
NELSON BC V1L 5P6

HENDRIX LEO W
SITE 11 COMP 8 RR 1
SLOCAN PARK B C V0G 2E0

HOLCOMBE JAMES W
10712 74 AVE
EDMONTON AB T6E 1G6

HOLLADAY DAVID A
PO BOX 39
WINLAW BC V0G 2J0

HORSWILL WILLIAM J
BOX 176
WINLAW BC V0G 2J0

HYATT BRYCE W & JULIE-ANN
RR 1 COMP 1 GRP 2
WINLAW BC V0G 2J0

KALMAKOFF FRANK & FAYE
PO BOX 145
WINLAW BC V0G 2J0

KASE PAUL D
PO BOX 6305
MORAGA CA 94570 USA

KERFOOT BEVERLY E & JOAN B
RR 1 SITE 19 COMP 12
WINLAW B C V0G 2J0

SHELOFF HELEN L
PO BOX 108
WINLAW BC V0G 2J0

SHERBININ FRED F & JOHN F
2011 PASS CREEK ROAD
CASTLEGAR BC V1N 4T1

SHKURATOFF HARVEY & DAWN M
RR 1 COMP 9 GRP 1
WINLAW BC V0G 2J0

SKEETE BARTEL
PO BOX 92
WINLAW BC V0G 2J0

SLOGGETT KEVIN D
BOX 75
WINLAW BC V0G 2J0

SMITH JOHN D
BOX 92
BURTON BC V0G1E0

SMOCH ANTHONY G
SITE 12 COMP 107 RR 1
SOUTH SLOCAN BC V0G 2G0

STEWART JOHN R
PO BOX 797
NELSON BC V1L 5S9

STOOCHNOFF LARRY
PO BOX 162
WINLAW BC V0G 2J0

STOOSHNOFF WILLIAM J & VERA
BOX 71
WINLAW B C V0G 2J0

STORY TERRY R & SUZANNE M
BOX 72
BURTON B C V0G 1E0

STUBBE CLINTON V
BOX 106
WINLAW BC V0G 2J0

TABURIAUX RENE P & ELAINE
RR 1
WINLAW BC V0G 2J0

TABURIAUX YOURI
RR 1 COMP 4 GRP 19
WINLAW BC V0G 2J0

TARR W GUY
PO BOX 115
WINLAW BC V0G 2J0

TEDESCO ROY E & NANCY Y
BOX 107
WINLAW BC V0G 2J0

KIRK ALAN D
GENERAL DELIVERY
WINLAW BC V0G 2J0

KOORBATOFF ELY M & NAIDA
RR 1 COMP 2 SITE 11
SLOCAN PARK BC V0G 2E0

KOORBATOFF HARRY M & MABEL
BOX 53
SLOCAN PARK BC V0G 2E0

KOSIANCIC BERNARD J & FAWN K
BOX 70
CRESCENT VALLEY BC V0G 1H0

KOSIANCIC RAYMOND J & IDA A
BOX 70
CRESCENT VALLEY BC V0G 1H0

LARSTONE PHILIP C & KATHY D
PO BOX 99
WINLAW BC V0G 2J0

LEGG BENJAMIN P
ITE 19 COMP 46 RR 1
WINLAW BC V0G 2J0

MALAKOFF JACK A
RR 1 GROUP 19 COMP 26
WINLAW BC V0G 2J0

MCCORMACK RONALD J
BOX 107
BURTON BC V0G 1E0

MCGEE GAYLE BETH
PO BOX 96
WINLAW BC V0G 2J0

MCGEE KENYON J & GAYLE B
RR 1
WINLAW BC V0G 2J0

TEES PATRICIA R
BOX 62
WINLAW BC V0G 2J0

TEINER WOLFGANG W F
5258 HWY 6 BOX 137
WINLAW BC V0G 2J0

THERRIEN ALLEN H
PO BOX 77
WINLAW BC V0G 2J0

THOMPSON DANNY R & GWENN L
PO BOX 78
WINLAW BC V0G 2J0

VOLANSKY BRENT I & POLLY
PO BOX 97
BURTON BC V0G 1E0

WALKER ROBERT E
BOX 25
WINLAW BC V0G 2J0

WILLOWS WENDY-ANN
BOX 121
WINLAW BC V0G 2J0

WILSON BRONWEN M & BRENDAN C &
PATRICK D
C/O BRENDAN WILSON
GB 15 A COMP 7 RR 1
WINLAW BC V0G 2J0

YOUNGREEN GUSTAVE R & PENNY E
RR 1 COMP 11 GROUP 19
WINLAW BC V0G 2J0

ZARCHIKOFF HARRY & NETTIE
RR 1
WINLAW BC V0G 2J0

COPIES OF REFERRAL LETTERS:

- First Nations Referral
- Other Stakeholders and Government Agencies

BRITISH
COLUMBIA

File: 10765-25 2001 FDP

June 6, 2005

Larry Peitzsche, R.P.F.
District Manager
Arrow Boundary Forest District
845 Columbia Avenue
Nelson BC V1N 1H3

Dear Sir:

BC Timber Sales (BCTS), Kootenay Business Area (KBA), hereby submits for approval the Final Submission version of Major Amendment #11 to the 2001-2006 Forest Development Plan for the Arrow Timber Supply Area.

Amendment #11 was advertised and made available for review and comment for a 30 day period commencing Monday May 2, 2005 and ending Tuesday May 31, 2005. BCTS received one letter from the West Bank First Nation and one letter from a domestic water user in the Big Sheep Creek area. Comments received during this time period have been incorporated into the final submission.

Major Amendment #11 addresses Mountain Pine Beetle, Douglas Fir Bark Beetle and Fir Engraver Beetle infestations in the Big Sheep Creek, Bull Dog Creek, Blueberry Creek Community Watershed (Robson Ridge and College Creek areas), Limpid Creek, Oscar Creek, Eagle Creek and the Whatshan Lake area (North and South Whatshan Lake). Required variances to standards are described in the Variance Table.

In respect to BC Timber Sales' round table with Field Services representatives of the Arrow Boundary Forest District on May 20, 2005, Field Services staff indicated several points to be incorporated into the final submission. I would like to respond to the points raised at this time:

General Comments:

1. Domestic Watersheds: BC Timber Sales has developed a strategy to mitigate as much as possible the impacts of forest health conditions on domestic watersheds. Details of this strategy are presented in Section 3.3.3 Measures to

Manage and Protect. BCTS is confident that these measures will adequately manage and conserve non-timber resources in these domestic watersheds.

2. The Variance Table has been revised to indicate only those variances requested under the authority of the District Manager. BCTS has also undertaken to develop a Forest Health Rationale Table-designed to support the requested variances under Section 11(3) of the OSPR.

3. The Variance Table has been revised to indicate the stand to be logged and provides an outline of the reserves to be retained. BCTS has also undertaken to develop a Forest Health Rationale Table-designed to support the requested variances under Section 11(3) of the OSPR.

4. BC Timber Sales has undertaken to conduct Ungulate Winter Range analysis by adopting the UWR linework and cover requirements presented in the *Forest and Range Practise Act* (FRPA), Section 7 Notice-Indicators of the amount, distribution and attributes of wildlife habitat. BCTS considers this information as the best information available to manage and conserve ungulate habitat. Cover analysis and stand recruitment strategies have been developed for all but one of the Management Units involved in this Amendment.

5. First Nations: Amendment # 11 text has been updated to indicate the process that was used since notification of the approval of the shortened review and comment period. One letter was received from the West Bank First Nation. The details can be found in the text under Section 1.4- Referal Process.

6. Ministry of Sustainable Resource Management representatives attended a joint meeting with BC Timber Sales on March 3, 2005. Details of our agreement are presented in Section 3.2.2 Measures to Protect Forest Resources- Old Growth Management Areas. I understood the meeting of March 3, 2005 as acceptance of BCTS' replacement strategy.

Forest Health Comments

1. BC Timber Sales has fulfilled Field Services' request to support the requested variances under the OSPR Section 11(3) with as much additional information as was available. Please refer to Appendix J- additional information is provided under the rationale for requesting the variance. BCTS has also provided a Forest Health Rationale Table in Appendix O which is to support the Variance Table rationale for each of the proposed blocks.

Area Specific Comments

The following area specific comments were raised at the May 20, 2005 round table:

North Whatshan- A upper road has been added to the final submission version. This road is proposed as a temporary road and will be deactivated post harvesting and silviculture activities. The width of the right of way will be minimized, and the adjacent OGMA will be respected as much as operationally possible. There is no known anticipated impact on the public or non-timber resources with the proposal of this road.

South Whatshan- BCTS practices forester for the Nakusp Field unit has referred the possible encroachment of A75965 into TFL 23 to the Pope and Talbot office in Nakusp on May 30, 2005. BCTS anticipates that this issue can be mutually resolved.

Eagle Map sheet: Adjacent block SNAGB0053 is shown and labelled as such on the Eagle Map sheet. BCTS did not assign a colour theme to minimize confusion as to which block is BCTS' and which block is Pope and Talbot's.

Bull Dog Map sheet: The Gladstone Park Boundary has been enhanced to improve visibility.

Limpid Creek- the Variance Table has been revised to reflect cut blocks adjacent to natural openings. The Variance Table, Forest Health Rationale Table, and the FDP Am #11 text address the blocks where re-entry is planned to address past harvesting practises.

Ymir- the Caribou Habitat Assessment prepared by Nanuq Consulting is presented in Appendix P of Amendment # 11.

If you have any questions or comments regarding this plan please call the undersigned at the Kootenay Business Area Office (250-825-1132).

Yours truly,

Curt J. Nixon, RPF
A/ Planning Forester
BC Timbersales
Boundary –Arrow Field Units
Attachment(s): Amendment #11-
Final Submission

Arrow Boundary Forest District
Arrow Timber Supply Area (TSA)
BC Timber Sales 2001-2006
FOREST DEVELOPMENT PLAN (FDP)
MAJOR AMENDMENT # 11

Initial Submission Date: April 29, 2005

Final Submission Date: June 7, 2005 (anticipated)

Amendment: #11 is a mandatory amendment submitted in accordance with Section 39(2) of the *Forest Practises Code of British Columbia Act* and Section 7 of the *Operational and Site Planning Regulation* (OSPR).

BC Timber Sales requested a 30 day review and comment period for this amendment in accordance with Section 27(5) of the OSPR on December 20, 2004 to address several mountain pine beetle, fir bark beetle and fir engraver beetle infestation sites in BCTS' operating areas. This request was approved by the District Manager of the Arrow-Boundary Forest District on January 10, 2005.

Cutblocks and related roads are proposed for the expedited salvage and control of the infestation sites. The proposed development and recent policy changes have resulted in some changes and additions to the original FDP text. The following sections of the Arrow-Boundary Timber Supply Area 2001-2006 FDP (the plan) have been amended:

Section 1.4 Referral Process
Section 3.2 Biological Diversity
Section 3.2.2 Old and Mature Forest and Regional Connectivity
Section 3.2.5 Maximum Cutblock Size, Green-up and Patch Size
Section 3.3 Water
Section 3.3.2 Watershed Assessments
Section 3.3.3 Measures to Manage and Protect
Section 3.6 Wildlife
Section 3.6.1 Caribou
Section 3.6.3 Objectives for Known Ungulate Winter Range
Section 3.8 Visual Landscape Management
Section 3.8.1 Strategies for Visual Landscape Resource Management
Section 4.1 Harvest Summary Table- Consistency with Required Assessments
Section 5.0 Access Management Table- Consistency with Required Assessments
Section 6.0 Forest Practises Variances
Section 7.0 Advertisements
Section 8.0 Review and Comment/Documentation and Referrals
Section 9.0 Summary of Changes- Changes made as a result of the Review and Comment
Section 10.0 Maps – including Eagle, N. Whatshan, S. Whatshan, Bulldog, Big Sheep, Robson Ridge, College, Limpid, and Ymir

The following information is attached:

Appendix A - Harvest Summary Table
Appendix B - Engineering Access Management Table

Appendix E – Draft Biodiversity Table
Appendix J – Forest Practices Variances
Appendix K – Legal Advertisements
Appendix L – Referrals, Comments and Review Comments (including copies of letters received and responses made)
Appendix M – Summary of Changes made to this plan amendment as a result of review and comment
Appendix N – Approvals and Amendments to the Forest Development Plan
Appendix O- Forest Health Rationale Table
Appendix P - Caribou Habitat Assessment for Oscar Creek

Reason for Amendment:

Under this amendment, BC Timber Sales (BCTS) seeks approval to address known Mountain Pine Beetle, Douglas fir bark beetle, and Fir Engraver Beetle infestation sites to minimize the loss, damage or destruction in timber value of infested stands. This amendment seeks to also address stands of timber that have been assessed as having a moderate to severe susceptibility rating to mountain pine beetle which pose the potential for further loss in timber values in the near future (susceptible stands).

To support the proposal to develop susceptible stands, BCTS has completed a Pine Management Priority Report -conducted in the fall of 2004 and completed March 2005- (the strategy). BCTS proposes to utilize the susceptibility ratings provided by the strategy in combination with ground surveys to commence a proactive planning initiative to be in a position to address beetle populations as the infestations move into the identified susceptible stands.

Cutblocks and related roads have been proposed in accordance with the strategy. Forest Practises Variances are addressed in Appendix J. At the request of the Arrow Boundary District staff at the Round Table of May 20, 2005, BCTS has also provided additional supporting forest health rationale for the proposed blocks. Details are provided in Appendix O.

The proposed development has resulted in some changes and additions to the original FDP text which are identified below:

Description of the Amendment:

1. The following table shows the additions of cutblocks required to address the populations of Mountain pine beetle, Douglas fir bark beetle, and Fir engraver beetle infestation sites and stands of timber that have been assessed as having a moderate to severe susceptibility rating to mountain pine beetle. These totals have been revised from the Review and Comment version to better reflect the proposed development.

Mapsheet #	Location	Licences and Blocks to add to the Plan	Area to add to the Plan (ha)
Big Sheep	Big Sheep, Esling and Santa Rosa Creeks	TSL A62692- 1 and Blocks/development units BS-16, 17, 18, and 19	262
Robson Ridge	Moberly Creek and Gem Hill	Blocks/development units RR 6, 7, and 8	70
College Creek	Blueberry Creek	Blocks/development units CC-6, 7, and 8	261
Limpid Creek	Limpid, McCormick and Rosebud Lake	Blocks/development units LI 5, 6, 7, 8, 9, 10, 11, 12, and 13	320
Bulldog Creek	Peter and Porcupine Creeks	TSL 72329 (3 parts) and Blocks/development units BU 9, 10, 11, and 12	621
Whatshan North	W. Whatshan	Blocks/development unit NW 11	100
Whatshan South	East Barnes	TSL 75965 and Blocks/development units SW 9 and SW10/A75697	184
Eagle Creek	Edgewood face, 95 – Worthington, and 15 km Worthington	TSLs 70241 and 75259 and Blocks/development unit EC16	780
Ymir Creek	Oscar Creek	Blocks/development units YM 12 and 13	118
		Total:	**2716**

2. Further details of the proposed development are shown on the Harvest Summary Table (Appendix A) and the Engineering Access Management Table (Appendix B).

Brief Highlight of Changes and Rationale:

Changes to Category "A" cutblocks from previous plan amendments:

Mapsheet	TSL #	Nature of Amendment
Big Sheep Creek	A62692 Block 1	Block was previously approved as a clearcut. This amendment proposes to change it from CC to SC as this unit is conducive to partial cutting.
Big Sheep Creek	BS-4	This block is currently approved. BCTS has included BS-4 with reduced area in the harvest table for clarity only. The reduced area of the approved BS-4 is presented in this amendment as unit BS-17. BS-17 is proposed as a different harvest system than the approved BS-4.
Big Sheep Creek	BS-16,17, 18 and 19	These blocks are new to this plan amendment. These blocks will address mountain pine beetle and fir engraver beetle infestation sites.
Ymir	YM-12 and 13	New blocks added to this plan amendment. These units will address mountain pine beetle infestation in pine only. The Caribou Habitat Assessment which will guide development is presented in Appendix P
N. Whatshan	NW11	Moves from a Category I block to Category A-proposed block in this amendment
S. Whatshan	A75965	New block to the plan under this amendment
S. Whatshan	SW9 and A75697	Previously approved cutblock- block shape and road orientation is revised.
S. Whatshan	A75697	Previously approved cutblock- block shape and road orientation is revised.
Eagle	A70241	Moves from a Category I block to Category A-proposed block in this amendment. BCTS originally stated that a patchsize analysis completed by Riverside Forest Products in 2001 was to support development of 40-80 hectare units. Now, given other information, BCTS is proposing the block size based on a Forest Health Variance.
Eagle	A75259 +EC16	These blocks are new to this plan. Pine removal only-so extensive reserves are planned.
Robson Ridge	RR-6,7,8	These blocks are new to this plan amendment.
College Creek	CC-6, 7 and 8	These blocks are new to this plan amendment. Pine removal only- so extensive reserves are planned
Limpid Creek	L-I5,6,7,8,9,10, 11,12 and 13	These blocks are new to this plan amendment. Infested timber removal only- so extensive reserves are planned. BCTS is working with WLAP

		representatives to develop stand level reserves.
Bull Dog	A72329	This block was previously approved as a partial cut block, this amendment proposes this unit as a clearcut to address Forest Health issues.
BullDog	BU-9,10,11,12	These blocks are new to this plan amendment . Pine removal only- so extensive reserves are planned.

The following statements are to be added to the FDP text:

Measures to Protect-General

The general measures to protect non-timber resources described in the BC Timber Sales Arrow TSA 2001-2006 FDP dated September 20, 2001 (date of final revisions) apply to the proposed cutblocks and roads contained herein. Where variances are required, they can be found in the Variance Table Appendix J.

Section 1.4 Referral Process

Activity	**Date (yyyy/mm/dd)**	**Location (and media with respect to Public Review)**	**Comments Received (Y/N)**	**Date (yyyy/mm/dd)**
Submission of Amendment 11				
Ministry of Forests	2005/04/29	Arrow Boundary Forest District	**Yes**	**2005/05/30**
Public Review				
Advertising (first publication)	2005/04/27	B.C. Gazette Castlegar Citizen- Castlegar, BC Arrow Lakes News – Nakusp, BC Trail Daily Times – Trail, BC Ministry of Forests - Official Notices Website	**See Below**	
Deadline for Comments	**2005/05/31**	Kootenay Lake Forestry Centre, Nelson, BC	**Yes**	**See Appendix L**
Referral Letters:				
Agencies:				
Land & Water BC	2005/05/28	Kamloops, BC Cranbrook, B.C.	**No**	
Energy and Mines				
First Nations:				**See Appendix L**
See list in Appendix L		Various	**Yes**	
Affected Stakeholders:				
Ranchers		See list in Appendix L	**No**	**See Appendix L**
Trappers			No	

Water License Holders		Including Edgewood Face Technical Committee and the City of Castlegar	Yes	
Final Submission for Approval (if necessary)	**June 7, 2005**	Arrow Boundary Forest District		
Anticipated Approval Date	**June 14, 2005**			

Amendment # 11 for the Arrow Boundary Forest District was advertised on the Ministry of Forests - Official Notices Website and local newspapers including the Arrow Lakes News, the Castlegar Citizen, and the Trail Daily Times. Copies of legal advertisements are located in Appendix K.

Referral letters have been sent to a number of individuals, licensed resource users, First Nations, government agencies, and organized groups. A referral list is provided in Appendix L along with samples of letters sent to indicated parties. Two additional letters were prepared and are included in the master referral list above, that address development in the Edgewood Face area- addressed to the Edgewood Face Technical Committee dated January 10, 2005 and the City of Castlegar – addressing the Blueberry Creek Water License cancellation request dated April 19, 2005. Response that were received from the Review and Comment period are provided in Appendix L.

Communications with First Nations for Amendment #11 Arrow

BCTS applied for and received a reduced comment and review period of 30 days for Amendment #11. To ensure First Nations received adequate time to review the amendment BCTS committed to phoning First Nations at the time of approval of the reduced advertising period. George Edney phoned the First Nations and the list below summarizes those phone calls.

Okanagan Nation Alliance	Telephone on Feb 2, 2005 and left message for Mickey Werstick explaining the nature of the call.
Lower Similkameen Indian Band	Telephoned Steve Borsock on February 2, 2005 and discussed the shortened advertising period. He would like his name on the referrals to help speed things up. BCTS will try and comply with this in the future.

Okanagan Indian Band	Spoke with Jennifer Louis on Feb 2/05 and discussed the amendment shortened advertising period and BCTS in general. We agreed that we should get together and George Edney emailed her with an invitation for BCTS to meet with her. No reply has been received.
Osoyoos Indian Band	Left a message for Steve Jones on Feb 2, 2005 with details of the nature of the call and nothing has been received.
Penticton Indian Band	I left a message for Greg Gabriel on Feb 2, 2005 and explained the nature of the call. I never did get a hold of him.
KKTC	I left a message for Ray Warden to phone me on Feb 2/05. Shane Bowden then spoke with Dan Parody and set up a mtg which took place with Ray Warden, Dan Parody Shane and myself. We discussed the amendment #11 at that meeting and there was no specific concerns other than an interest in the archaeological work being done and who was doing it.
Westbank First Nation	Spoke with Larry Derrickson On Feb 2, 2005 about the reduced advertising period. He discussed at great length the nature of the new self government agreement Westbank had entered into. He expressed an interest in meeting with BCTS
Spallumcheen Indian Band	Telephoned Loretta on Feb. 2, 2005 and she was on holidays for 10 days so I emailed the details of the reduced advertising period. Did not receive a response.

In addition to the telephone calls BCTS sent referral letters to all First Nations on the list above. A copy of these letters is attached in Appendix L.

There was a slight difference in the referral letter that was sent from BCTS compared with the example letter that ABFD provided to the ABFA dated February 16th, 2005. The only significant difference being that Ted Evan's name and phone number was not provided in our referral letter and the example letter does specify this. BCTS commits to ensuring that all referral letters to the First Nations contains the exact statement as provided ion the February 16, 2005 example which includes Ted Evans name and phone number as the district consultation contact.

BCTS received a response from the Westbank First Nation which describes their right to title and involvement in the treaty process. BCTS did not find anything that they could respond to as discussed with Ted Evans.

No other input was received from First Nations. BCTS feels we have provided ample opportunity through phone calls and emails for First Nations to provide comment on Amendment #11. In addition we have indicated in our referral letters that consultation with the district was available and no response was received by the district.

Section 3.1.1 Measures to Protect Forest Resources: Timber

Issues

Mountain pine beetle attack in lodgepole pine continues to be the largest cause of catastrophic timber mortality within BCTS' operating areas. BCTS has also seen an increase in damaged timber due to Douglas-fir beetle (and Fir Engraver Beetle. Aerial overview surveys, ground reconnaissance and detailed susceptibility mapping conducted over the BCTS' operating areas in 2004 confirm on-going heavy mountain pine beetle, douglas fir beetle and fir engraver beetle infestations throughout the areas identified in this amendment.

Measures to Manage and Protect

As mentioned in the introduction, BCTS proposes to address beetle infestations through priority harvesting of the infested timber and to seek approval to develop timber at risk- identified in BCTS' Pine Management Priority Plan conducted in the fall of 2004.

Priority harvesting of infested timber are those stands with confirmed infestations of mountain pine beetle, fir bark beetle and fir engraver beetle.

Timber at risk areas are those stands identified in the Pine Management Priority Report (the strategy) prepared by Sattva Consulting in March of 2005. This strategy is designed to provide BCTS and the District Manger of the Arrow-Boundary Forest District with a comprehensive and practical plan to address mountain pine beetle susceptible stands in the short to mid-term (5-10 years). Two specific areas where this plan will be utilized to address identified stands are the Bull Dog and Big Sheep Creek drainages.

Generally, it may be necessary to harvest infested timber utilizing clearcut systems. The preferred option however, in areas of extensive infestation, or in areas planned to address developing infestations, will be to focus on infested timber or timber at risk removal only, with retention of other species and the use of reserves to address stand level attributes as much as operationally feasible.

Section 3.2.2 Measures to Protect Forest Resources: Biodiversity Targets

Objectives for the distribution of old and mature-plus-old seral stages are established in the Kootenay Boundary Higher Level Plan Order (KBHLPO). This order requires that all proposed harvest blocks be assessed against availability of forest cover age classes to ensure achievement of seral stage targets for each landscape unit.

BC Timber Sales has applied Variance #06 which permits the harvesting of timber, despite the requirement of objective 2.

Section 3.2.2 Measures to Protect Forest Resources: Old Growth Management Areas

BC Timber Sales has worked closely with the Ministry of Sustainable Resource Management (MSRM) representatives in early March of 2005 to rationalise conflicts between the MSRM proposed Old Growth Management Areas (OGMAs) and the proposed BC Timber Sales development units within the following drainages- Bull Dog Creek, Big Sheep Creek, College Creek, North Whatshan, South Whatshan, Eagle Creek and Limpid Creek.

BC Timber Sales will not harvest areas that are shown to be within the proposed OGMAs that are age class 8 and non-Pl leading. BC Timber Sales will field verify the proposed block areas for timber type and age class that are within proposed OGMA polygons and develop site plans in accordance with the agreement reached with the MSRM representative as detailed below:

Specifically:

- Bull Dog Creek - Development units BU-10 , BU-11 and BU-12 will reserve the adjacent age Class 8 fir types as proposed Old Growth Management Areas.
- Big Sheep Creek - The Swehaw Road received Category A-approved status with the approval of FDP Amendment 9. The proposed OGMA does not restrict the construction of the Swehaw Road nor other blocks previously approved. Development Unit BS-17 will respect the adjacent age class 8 non-Pl leading types upon field verification of the development unit's boundaries.
- College Creek: Development unit CC-6 will reserve the adjacent polygon 400 - age class 8 spruce and fir as a proposed OGMA. The location of road BR-01 should make every reasonable attempt to avoid/minimize impact to this proposed OGMA area.

- North Whatshan: Development unit NW-11 will respect, as much as operationally feasible, the proposed age class 8 non-Pl leading types associated with the proposed TFL 23 OGMA unit immediately to the north of this unit. Spur 1 is proposed to access the upper portion of unit NW11. Upon completion of harvesting, this spur will be deactivated.

- South Whatshan: Development unit A75965 will respect, as much as operationally feasible, the proposed age class 8 non-Pl leading types associated with the proposed TFL 23 OGMA unit immediately to the north of this unit.

- Eagle Creek: Development unit EC-16's eastern boundary will be modified, as much as operationally feasible, to respect the age class 8 non-Pl leading types associated with the western boundary of the proposed OGMA unit.

- Limpid Creek: For the Limpid Creek proposed OGMA and Mature Plus Old Achievement - BC Timber sales arrived at a mutually agreeable recruitment strategy with Ministry of Sustainable Resource Management representative on February 8, 2005. The proposed development will be in accordance with this agreement. A copy of this agreement is provided in Appendix E.

- Oscar Creek (Ymir Mapsheet) has no conflicts with MSRM proposed OGMAs.

- Robson Ridge Mapsheet has no conflicts with MSRM proposed OGMAs. BC Timber Sales has suggested that the age class 8 polygon southwest of development block RR11 be identified by MSRM as a suitable proposed OGMA.

Section 3.2.5 Maximum Cutblock Size, Green-up and Patch Size

In cases where Category "A"-proposed cutblocks are proposed next to cutblocks identified as NSR, those units have been identified in Appendix J as requesting a variance under the Operational and Site Planning Regulation –Section 11(3) to address a Forest Health condition.

Where development is shown adjacent to previously harvested blocks that have met green-up requirements, the previously harvested blocks have a white background.

Patch size analysis has not been done for blocks exceeding 40 ha in size due to forest health factors identified above in the reasons for this amendment. Proposed cutblocks are expedited major salvage with an approved 30 – day referral period.

Section 3.3.2 Watershed Assessments

Under Amendment # 11 development is proposed within 1 community watershed and 7 domestic watersheds. Mapping and reports from assessments completed to date in the community watershed are available under separate cover.

Community Watersheds:

Amendment # 11 proposes development in the Blueberry Creek Community watershed.

In September of 2003, BCTS arranged for an update of the Blueberry Creek IWAP entitled "2003 Watershed Assessment of the Blueberry Creek Watershed" by Henderson Environmental Consulting Ltd. which resulted in the following recommendations:

All proposed development is restricted to treatment to mitigate forest health issues. The 1999 IWAP for Blueberry Creek anticipated that approximately 300 hectares of harvesting would occur in addition to the harvest areas that were in approved and proposed status at the time of the IWAP. The 2003 IWAP update again anticipated unplanned harvesting to address forest health issues (actual estimated proposed development is approximately 285ha with a minor amount above the H60 line). It states that this is acceptable provided that protective measures are applied to the tributary streams around mainstem channels and that the mass wasting and sediment delivery hazard to creeks are minimized.

Section 3.3.3 Measures to Manage and Protect

The 2003 IWAP provided the following points for hydrologic guidance with respect to strategic planning to address forest health concerns:

1. *Harvesting low-sensitivity areas is not likely to impact hydrologic hazards and could proceed if the landslide and sediment delivery hazards are assessed on a block by block basis.* (Henderson, 2003). *Least sensitive harvesting is located below the H60 line, in the Residual area and on south facing slopes.*

BCTS has accounted for this by identifying the assessments to be conducted as indicated in the Harvest Tables – Section 4.1

2. *Hydrologic management is suggested on sensitive areas which were identified as a) riparian areas around the mainstem channels of Blueberry Creek and tributaries and b) upper elevation openings in sub-basins south of Highway 3. In situations relating to item a) the hazard of delivering sediment to the stream from harvesting, roads and blowdown are to be assessed on a block by block basis.* (Henderson, 2003)

BCTS has accounted for this by identifying the assessments to be conducted as indicated in the Harvest Tables – Section 4.1

3.*With respect to item b), upper elevation block proposals on the south side of Highway 3 above the H60 elevation are sensitive due primarily to their potential to contribute to the peak flow hazard.* (Henderson, 2003)

BCTS will address this requirement by referring to a Resource Professional who will be retained to: conduct a channel assessment for the 7-mile sub-basin, conduct an ECA report card for the 7-mile sub-basin, and then review the impact of harvesting the proposed units in the 7-mile sub-basin with respect to the overall ECA of the Blueberry Creek Community Watershed. Proposed cutblocks CC6, CC7 & CC8 are all partly tributary to 7-mile creek.

BCTS will undertake an assessment of the channel conditions and ECA level within this sub-basin prior to development, consistent with recommendation #6 of the 2003 IWAP.

BCTS will abide by the recommendations of this report prior to finalizing development plans in the 7-mile sub-basin including inspecting channel conditions and conducting a sub-basin assessment and specifically review the proposed block for hydrologic impact. In this manner, development proposed within Amendment # 11 is consistent with the results and recommendations of the above watershed assessment. It is suggested sediment delivery be assessed to riparian areas around the mainstem channels of Blueberry Creek and tributaries from harvesting, roads and blowdown (p.5). Assessment of ECA impact to peak flows at the reach, sub-basin and watershed scales are recommended in block CC07 (where it is located above the H60 line). Roads are currently active in this area but road deactivation and rehabilitation for proposed roads will be undertaken as harvesting is completed.

Reference should also be made at this time to the letter to the City of Castlegar, dated April 19, 2005 in Appendix L.

Domestic Watersheds:

Section 3.3.3 Measures to Manage and Protect

BC Timber Sales has undertaken to determine ECA snapshots of domestic watersheds that are involved in this amendment. The drainages are:

- Dog Cr. (4 Sub-basins)
- Elvidge Cr.
- McCormick Cr.
- McIntosh Cr.
- Moberly Cr. (3 Sub-basins)
- Robinson Cr.
- Swehaw Cr. (3 Sub-basins)

The ECA snapshots indicated below is an extrapolation of the ECA project completed by Timberland Consultants in 2001 *"Arrow Forest District SBFEP DWS ECAs"* (The table presented below was completed by G. Portman, Feb. 2005 reflecting changes to: ECA%, road density, number of stream crossings and roads on unstable slopes where applicable – no roads on unstable slopes were identified). Hard copy maps were used to determine sub-basin areas. Some of the sub-basins identified in the table and summary do not appear on the FDP maps. Maps used for ECA calculations can be viewed at the BCTS Office in Nelson. Where watersheds have been sub-divided into sub-basins, the domestic watershed class is followed by the subscript to indicate sub-basin.

ECA Snapshot Procedures:

- For each drainage or sub-basin the "Opening Statistics" in the above study were taken and recorded at face value.

- A growth rate of 0.3 meters per year was applied to each opening to account for the increase in tree heights during the years from 2001 to 2005.
- New hydrological recovery factors were applied to each opening as per Table A2.2 of the Interior Watershed Assessment Procedure Guidebook V2.2.
- Total existing road areas were taken from the Timberland study and included in the calculation.
- Approved blocks and roads were included.
- Proposed blocks and roads were added to reflect Amendment #11.
- Care was taken to not add roads on CC blocks in order to avoid double counting of ECA from blocks and roads.
- Three Report Card parameters were taken from the Timberland study and updated with data available since 2001, including the proposals for Amendment #11.

  They are:
  a) Road Density
  b) Number of Stream Crossings
  c) Roads on Unstable Slopes

Specific Details:

Amendment # 11 falls within the boundaries of the following domestic-use (consumptive) watersheds as summarized below. BCTS has completed an Equivalent Area Cut (ECA) snapshot update and the results are presented below:

Map Sheet	Name	Total Area (ha)	Existing ECA%*	Proposed harvesting Area (ha)	Proposed ECA% (Total)	Report Card Submission Date if Required
Big Sheep	Swehaw Cr. SB1	1869	12.6	45.2	14.9	N/A
Big Sheep	Swehaw Cr. SB3	1132	15.6	0	15.6	N/A
Big Sheep	Swehaw Cr. SB4	1371	5.1	38.4	6.2	N/A
Eagle	Robinson Cr.	762	7.1	45.8	13.1	N/A
Robson Ridge	Moberly Cr. SB1	313	23.3	32	33.5	N/A
Robson Ridge	Moberly Cr. (Polygon 1018)	1582	27.8	12	28.6	N/A
Robson Ridge	Moberly Cr. SB4	1243	39.5	nil	39.5	N/A
Eagle	McIntosh Cr.	219	7.3	11.4	12.5	N/A
Limpid Cr	McCormick Cr.	371	27.0	40.4	37.9	N/A
South Whatshan	Elvidge Cr.	301	0	29.7	9.9	N/A
Bulldog	Dog Cr SB 1	4194	6.9	125	9.9	N/A
Bulldog	Dog Cr SB 3	856	12.7	22.8	15.4	N/A
Bulldog	Dog Cr SB 4	1582	7.9	232.8	22.6	N/A
Bulldog	Dog Cr SB 5	977	29.0	282	57.9	N/A

Drainage Details:

Swehaw Creek:

Swehaw Creek, SB 1, has a total watershed basin area of 1869 ha and is classified as a Class 3s watershed in accordance with the KBLUP-implementation strategy. There is one point of diversion (POD) on the main stem of Swehaw Creek (PD28329). The first area of new development is located approximately one km upstream from the noted POD.

There is no new development proposed in Swehaw Creek, SB 3.

Swehaw Sub-basin 3 Report Card

Road Density	1.1 km/km2
Number of Stream Crossings	11
Roads on unstable slopes	0 km/km2 (no change)

Swehaw Creek, SB 4, has a total watershed basin area of 1371 ha and is classified as a Class 3s watershed in accordance with the KBLUP-implementation strategy. There is one point of diversion (POD) on the main stem of Swehaw Creek (PD28329). The first area of new development is located approximately one kilometer upstream from the noted POD.

Robinson Creek

Robinson Creek has a total watershed basin area of 762 ha and is classified as a Class 3 watershed in accordance with the KBLUP-implementation strategy. There are two points of diversion (POD) on the main stem of Ferguson Creek (within the Robinson Creek Watershed Basin Area). The first area of new development is located approximately 1.4 km upstream from Ferguson Creek PD73198.

Moberly Creek

Moberly Creek, SB 1, has a total watershed basin area of 313 ha and is classified as a Class 3s watershed in accordance with the KBLUP-implementation strategy. There are 6 points of diversion (POD) on the main stem of Moberly Creek. The first area of new development is located approximately 4.2 km upstream from Moberly Creek PD25562.

Moberly Creek Sub-basin 1 Report Card

Road Density	2.30km/km2 (no change)
Number of Stream Crossings	10 (no change)
Roads on unstable slopes	0km/km2 (no change)

Moberly Creek (Polygon 1018) has a total watershed basin area of 1582 ha and is classified as a Class 3s watershed in accordance with the KBLUP-implementation strategy. There are 6 points of diversion (POD) on the main stem of Moberly Creek. The closest area of new development is located approximately 4.2 km upstream from Moberly Creek PD25562.

Moberly Creek (Polygon 1018) Report Card

Road Density	2.31km/km2 (no change)
Number of Stream Crossings	17 (no change)
Roads on unstable slopes	.01km/km2 (no change)

Moberly Creek Sub-basin 4 Report Card

Road Density	2.73km/km2 (no change)
Number of Stream Crossings	15 (no change)
Roads on unstable slopes	.12km/km2 (no change)

McIntosh Creek

McIntosh Creek has a total watershed basin area of 219 ha and is classified as a Class 2 watershed in accordance with the KBLUP-implementation strategy. There are 3 points of diversion (POD) on the main stem of McIntosh Creek. The closest area of new development is located approximately 2.7 km upstream from McIntosh Creek PD67379.

McCormick Creek

McCormick Creek has a total watershed basin area of 371 ha and is classified as a Class 3 watershed in accordance with the KBLUP-implementation strategy. There is one point of diversion (POD) on the main stem of McCormick Creek. The closest area of new development is located approximately 1 km upstream from McCormick Creek PD28479.

McCormick Creek Report Card

Road Density	3.22km/km2 (no change)
Number of Stream Crossings	14 (no change)
Roads on unstable slopes	0 km/km2 (no change)

Elvidge Creek

Elvidge Creek has a total watershed basin area of 301 ha and is classified as a Class 3 watershed in accordance with the KBLUP-implementation strategy. There is 1 point of diversion (POD) at Whatshan Lake. The closest area of new development is located approximately 2.3 km upstream from Whatshan Lake PD69232.

Dog Creek

Dog Creek, SB 1 has a total watershed basin area of 4194 ha and is classified as a Class 3s watershed in accordance with the KBLUP-implementation strategy. There are 5 points of diversion (POD) on the main stem of Dog Creek. The closest area of new development is located approximately 7.8 km upstream from Dog Creek PD70790. Porcupine Creek PD71109 is adjacent to new development in this basin.

Dog Creek, SB 3 has a total watershed basin area of 856 ha and is classified as a Class 3s watershed in accordance with the KBLUP-implementation strategy. There are 5 points of diversion (POD) on the main stem of Dog Creek. The closest area of new development is located approximately 7.8 km upstream from Dog Creek PD70790. Porcupine Creek PD71109 is adjacent to new development in this basin.

Dog Creek Sub-basin 3 Report Card

Road Density	1.21 km/km2
Number of Stream Crossings	7 (no change)
Roads on unstable slopes	.03 km/km2 (no change)

Dog Creek, SB 4 has a total watershed basin area of 1582 ha and is classified as a Class 3s watershed in accordance with the KBLUP-implementation strategy. There are 5 points of diversion (POD) on the main stem of Dog Creek. The first area of new development is located approximately 7.8 km upstream from Dog Creek PD70790. Porcupine Creek PD71109 is adjacent to new development in this basin.

Dog Creek Sub-basin 4 Report Card

Road Density	.95 km/km2
Number of Stream Crossings	7 (no change)
Roads on unstable slopes	0 km/km2 (no change)

Dog Creek, SB 5 has a total watershed basin area of 977 ha and is classified as a Class 3s watershed in accordance with the KBLUP-implementation strategy. There are 5 points of diversion (POD) on the main stem of Dog Creek. The first area of new development is located approximately 7.8 km upstream from Dog Creek PD70790. Porcupine Creek PD71109 is adjacent to new development in this basin.

Dog Creek Sub-basin 5 Report Card

Road Density	2.26 km/km2
Number of Stream Crossings	18
Roads on unstable slopes	0 km/km2 (no change)

No registered domestic water license intakes were identified using the Land and Water BC website for the following drainages: Porcupine Creek in the Dog Creek Mapsheet and Oscar Creek in the Ymir Mapsheet.

ECA Management Strategies:

As discussed in the review and comment document BCTS has complete ECAs and report cards for the domestic watershed (DWS) for which we have proposed new development. The District Guidance for DWS indicates an ECA limit of 30% as a "strategy" for managing DWS.

BCTS concurs with this as a general strategy. However, where forest health requires prompt harvest of stands, an ECA limit of 30% is often not attainable and therefore other strategies to reduce the potential for an adverse impact on a DWS must be proposed. If harvest is predicated on the need to remove timber immediately because of the potential for economic loss of value, then alternative strategies must be considered.

The reason BCTS is willing to accept a higher ECA and propose alternative strategies is because the loss of the hydrologic function of the forest cover (to the ECA which we have calculated as proposed) will happen regardless in relatively homogeneous stands under attack by forest health agents.

BCTS provides alternative strategies for 4 different DWS and/or sub-basins and we are confident of these strategies for managing the DWS where a higher ECA is projected.

Moberly Creek – Robson Ridge Map Sheet

- Gross area is indicated as 42 ha.
- Net area will be less than 40 ha and only the Pl types will be targeted for removal, with reserves in the block
- ECA as calculated is 34% which is assuming to clear-cut of the entire area, we estimate the final ECA to be less than 30%.

- No new roads are proposed.
- Any bladed or excavated trails will be rehabilitated in a timely fashion ensuring natural drainage is re-established.
- The Site Plan and Harvest plan will ensure that due care and attention is given to the prescription for the riparian management area of the stream that is within the proposed block.

McCormick Creek – Limpid Map Sheet

- Gross area is indicated as 45 ha.
- Net area will be less than 40 ha and the final ECA is projected to be right around 30%, it is currently estimated at 38%.
- No new roads are proposed.
- Any bladed or excavated trails be rehabilitated in a timely fashion ensuring natural drainage is re-established
- The existing crossing of McCormick creek has been problematic over the years; BCTS intends to mitigate the past failures through road works at the crossing.
- A TSFA was completed for the block that is within this DWS. The TSFA indicates the block as low risk and a low likelihood of a debris flow initiating within McCormick Cr as a result of harvesting if the recommendations of the TSFA are followed. BCTS fully intends to follow all recommendations in the TSFA.

Bull Dog -Sub-basin 5

- Block BU-10 is a large patch of Pl which, when the ECA is estimated, will increase the proposed ECA to 58%.
- The block is generally conventional ground (moderate slopes)
- The calculated ECA has likely underestimated the height and therefore the hydrological recovery of existing harvested areas, because of our conservative approach to ECA calculations. BCTS will recci the adjacent plantations when development is planned for this unit and re-calculate the proposed ECA.
- The relatively homogeneous Pl block will have non-Pl species maintained to the extent they provide a hydrologic reduction in ECA (patches as proposed to single trees); single trees maybe left to meet stand level biodiversity.
- Prescriptions for riparian management zones (rmz) will consider the projected high ECA and rmzs will be prescribed (to the extent practicable) to mitigate the potential for any stream to channel water quicker.
- BCTS will carry out full rehabilitation by restoring natural drainage on in block roads that have no long term requirement; this will re-establish intercepted sub-surface water and reduce the channelling of ditch water.

Section 3.6 Measures to Protect Forest Resources: Wildlife

Section 3.6.1 Caribou Habitat

The Kootenay-Boundary Higher Level Plan (KBHLP) identifies caribou habitat areas within the Arrow Resource Management Zone, which cover portions of the Ymir, Sheep Creek, and Stag Leap BCTS operating areas. Within the caribou habitat areas, the KBHLPO sets requirements for forest practices and maintenance of forest cover by biogeoclimatic zone.

Development proposed in the Oscar Creek area is a result of a severe infestation of Mountain Pine Beetle. On March 25, 2005 the KBLUP-HLPO Variance # 4 was announced which expanded the management zone for caribou. Prior to variance number 4, the proposed Oscar Creek development was not within the caribou habitat area. However, upon amendment to the HLPO both proposed blocks in the Oscar development (YM-12 and YM-13, and related roads) were located within the revised management zone #1 of the Objective 3.4 map of the KBLPO.

BCTS has utilized Objective 5 Subsection 5(3) of the HLPO –Variance 04 which allows for a qualified professional to make an assessment and report on the area proposed for harvest.

BCTS commissioned Nanuq Consulting to complete a Mountain Caribou Field Assessment Report and a copy is attached to FDP Amendment #11 as Appendix P but does not form part of the FDP Amendment #11.

BCTS commits to complying with the recommendations provided in the Mountain Caribou Field Assessment Report in their entirety.

Appendix E –Draft Biodiversity Tables contain reference to 2.3 ha of age class 8 for LU 505 inside connectivity based on the proposed development indicated on Map Sheet-Ymir. BCTS will not harvest this 2.3 ha. Site Plans will address the retention of this area as a reserve.

Section 3.6.3 Objectives for Known Ungulate Winter Range

New and refined Ungulate Winter Range guidelines and areas have become available for the Arrow Boundary Forest District. BCTS considers this to be the best information available to manage ungulates. The new objectives for Ungulate Winter Ranges have been set by the *Forest and Range Practices Act, Forest Planning and Practices Regulation,* Section 7(2) - Notice – Indicators of the amount, distribution and attributes of wildlife habitat required for the winter survival of ungulate species in the Arrow TSA, including Woodlots. The notice includes updated winter range boundaries. There are also a set of UWR guidelines and map linework named 'Ungulate Winter Range Objective – Ministry of Water, Land and Air Protection (WLAP) Kootenay Region – West', that are expected to replace the Section 7 notices, under the *Forest and Range Practices Act, Government Action Regulation,* Sec. 12(1) and 9(2). This set of information is known as the Draft GAR Guidelines.

BC Timber Sales has received permission (as per January 10, 2005 letter of W. Stetski, Regional Manager, WALP) to adopt the Draft GAR guidelines and updated map linework in anticipation of this information being approved.

Consequently, BC Timber Sales has replaced the KBLUP-IS UWR linework on the FDP maps with the new Draft GAR linework and proposed development has been analyzed using the Draft GAR guidelines.

The following table shows the UWR management units that are impacted by proposed development in Amendment #11.

Mapsheet	UWR Management Unit	Amendment #11 Blocks
Santa Rosa	0343-MD	A62692-1
Big Sheep	0343-MD	BS 18
College	0271-MD	CC 06
Limpid	0328-MD	LI 05, LI 06
Limpid	0326-MD	LI 07, LI 08, LI 09, LI 10, LI 11, LI 12, LI 13
South Whatshan	0131-MD	SW 9

The following tables show the amounts of UWR pre and post Amendment #11. The new guidelines measure UWR by three criteria, percent snow interception cover (SIC), percent of area in early seral stages (<21 yrs) and percent of area in mature/old forest stands.

Draft: Management Unit 0343 – Mule Deer

	Gross SIC Area (ha)	Net SIC Area (ha)	SIC (%)	Gross Young Forage Area (ha)	Net Young Forage Area (ha)	Young Forage (<21yrs) (%)	Gross Old Forage Area (ha)	Net Old Forage Area (ha)	Old Forage Cover (>80yrs) (%)
Pre Amend 11	173.13	47.89	27.7	173.13	28.94	16.7	76.95	27.0	35.1
Post Amend 11	173.13	45.69	26.4	173.13	31.14	18.0	76.95	27.0	35.1
Target (%)	-	-	>30	-	-	<40	-	-	>10

Management unit 343 does not meet the target amount of SIC before considering the development proposed in Amendment #11. The amount of area currently in young seral stages is under the maximum of 40% and the amount of area in old forest stands is over the minimum of 10%.

A SIC recruitment strategy has been developed for management unit 343. Under the current UWR objectives, the target SIC is >30%. Post amendment #11, the existing SIC will be 26.4%. In order to achieve UWR objectives post Amendment #11, the following measures will be taken:

- The mature age requirement will be reduced by 10 years (from 81 to 71). This will allow the surplus in age class 4 to be included in mature age calculations. Short-term recruitment from this age class is required to achieve UWR objectives in the long term.
- The young (early seral) target will be increased by 10% (40% to 50%)
- Crown closure requirement will be reduced by 10% (40% to 30%).

These changes will increase the SIC percentage to 32.3% which exceeds the minimum 30% SIC requirement under current standards. Although some target percentages and age classes have been changed, they are not anticipated to have a negative impact on the current UWR conditions in this management unit.

Implementing this strategy will allow all three original UWR criteria in management unit 343 to be met in a maximum of 10 years.

Draft: Management Unit 0271 – Mule Deer

	Gross SIC Area (ha)	Net SIC Area (ha)	SIC (%)	Gross Young Forage Area (ha)	Net Young Forage Area (ha)	Young Forage (<21yrs) (%)	Gross Old Forage Area (ha)	Net Old Forage Area (ha)	Old Forage Cover (>80yrs) (%)
Pre Amend 11	182.63	107.59	58.9	182.63	43.58	23.9	31.59	30.16	95.5
Post Amend 11	182.63	107.59	58.9	182.63	43.58	23.9	31.59	30.16	95.5
Target (%)	-	-	>30	-	-	<40	-	-	>10

Management unit 271 meets the target amount of SIC and there is a surplus. The amount of area in young seral stages is under the maximum of 40% and the amount of area in old forest stands is over the minimum of 10%. All three UWR criteria have been met for this management unit. The development proposed in Amendment #11 does not change the numbers in the UWR analysis which means that either the development is a very small area or is in a forest type that does not meet the description of SIC.

Draft: Management Unit 0328 – Mule Deer

	Gross SIC Area (ha)	Net SIC Area (ha)	SIC (%)	Gross Young Forage Area (ha)	Net Young Forage Area (ha)	Young Forage (<21yrs) (%)	Gross Old Forage Area (ha)	Net Old Forage Area (ha)	Old Forage Cover (>80yrs) (%)
Pre Amend 11	1148.24	224.46	19.5	1148.24	85.58	7.5	67.82	4.62	6.8
Post Amend 11	1148.24	184.04	16.0	1148.24	154.19	13.4	67.82	2.51	3.7
Target (%)	-	-	>30	-	-	<40	-	-	>10

Management unit 328 does not meet the target amount of SIC before considering the development proposed in Amendment #11. The amount of area in young seral stages is under the maximum of 40% but the amount of area in old forest stands is under the minimum of 10%.

A SIC and old forest recruitment strategy has been developed for management unit 328. Under the current UWR objectives, the target SIC is >30% and the target Old Forage Cover is >10%. Post amendment #11, the existing SIC will be 16.0% and the Old Forage Cover will be 3.7%. In order to achieve UWR objectives post Amendment #11, the following measures will be taken:

- The mature age requirement will be reduced by 30 years (from 81 to 51). This will allow recruitment from surplus age classes to contribute to Old Forage requirements and immediately increase the SIC percentage to 64.9% which exceeds the minimum 30%. The amount of area in old forest stands with the new age requirement is 87.4%. This exceeds the minimum 10% requirement.

Implementing this strategy will allow all three original UWR criteria in management unit 328 to be met in a maximum of 30 years.

Draft: Management Unit 0326 – Mule Deer

	Gross SIC Area (ha)	Net SIC Area (ha)	SIC (%)	Gross Young Forage Area (ha)	Net Young Forage Area (ha)	Young Forage (<21yrs) (%)	Gross Old Forage Area (ha)	Net Old Forage Area (ha)	Old Forage Cover (>80yrs) (%)
Pre Amend 11	759.83	449.66	59.2	759.83	58.19	7.7	211.26	110.65	52.4
Post Amend 11	759.83	333.92	43.9	759.83	190.48	25.1	211.26	99.00	46.9
Target (%)	-	-	>30	-	-	<40	-	-	>10

Management unit 326 meets the target amount of SIC and there is a surplus. The amount of area in young seral stages is under the maximum of 40% and the amount of area in old forest stands is over the minimum of 10%. All three UWR criteria have been met for this management unit.

Draft: Management Unit 0131 – Mule Deer

Management unit 131 requires forest cover information from the adjacent TFL. This information is currently unavailable so the status of UWR is undetermined. Block SW9 was previously approved and has been reduced in size from 60 ha to 40 ha. Prior to sale of this unit, BCTS will seek source information and run an analysis for UWR cover and in the event that cover requirements are not met, a replacement or recruitment strategy will be developed to address this requirement.

3.8 Visual Landscape Management

Section 3.8.1 Strategies for Visual Landscape Resource Management

Any harvesting of timber in a visually sensitive area will require appropriate design of harvesting units to reflect:

1. the nature of shapes found in the landscape and
2. the extent to which forest health factors* influence the best visual design given operational and merchantability constraints.

Where natural openings exist, these will guide the size and shape of visible portions of proposed clearcuts given forest health factors which will influence the nature and extent of this design principle.

Forest Health Factors: This amendment contains many proposed cutblocks designed to address Mountain Pine Beetle, Douglas Fir Beetle and Fir Engraver Beetle infestations throughout BC Timber Sales operating areas. As a result, the ability to use the same species that is being infested to mitigate the visual impact of the block will be limited. Blocks are consequently larger than would be expected with normal, non-forest health related amendments. Although cutblock shapes are being designed given infestation occurrence, operability and merchantability, portions of green timber- not otherwise infested, may be required to be harvested in order for development to proceed following the principles of good visual design.

3.10 Range

3.10.1 Issues

Range tenure referrals were addressed by identifying irrigation licenses from the Land and Water BC web-site and sending notice letters to those addresses. No responses from range holders or trappers were received.

Measures to Manage and Protect

Range units are recognized as having high values for the grazing of domestic cattle and wildlife. These needs will be integrated into site plans as much as operationally feasible. .

4.0 Harvesting Section – Harvest Summary Table

For proposed development areas where terrain stability field assessments, flat over steep assessments, or soil erosion field assessments are required, planned developments will be consistent with the results and recommendations. For proposed development areas in the Harvest Summary Table (Appendix A) where terrain stability assessments are shown as completed, the development will be consistent with the results and recommendations of these reports.

5.0 Access Management-Road Construction, Modification and Assessment Table

For proposed roads where terrain stability field assessments, flat over steep assessments, or soil erosion field assessments are required, planned developments will be consistent with the results and recommendations of these assessments. For proposed roads to be used to access proposed development in the Road Construction, Modification, and Assessment Table (Appendix B) where terrain stability assessments are shown as completed; the development will be consistent with the results and recommendations of these reports.

6.0 Forest Practises Variances

BC Timber Sales proposes the following variances as identified in Appendix J that include variances in accordance with Section 11(3) of the Operation and Site Planning Regulation.

7.0 Advertisements

Amendment # 11 for the Arrow Boundary Forest District has been advertised in the Ministry of Forests - Official Notices Website and local newspapers including the Arrow Lakes News, the Castlegar Citizen, and the Trail Daily Times. Copies of the legal advertisements are located in Appendix K.

8.0 Review and Comment/Documentation and Referrals

Referral letters, along with an accompanying suitable scale map (where required) have been sent to those individuals and organizations identified in Appendix L. Comments have been incorporated into the FDPA #11 final submission.

9.0 Summary of Changes

Based on the Review and Comment, changes have been made to FDP Amendment #11. A Summary of Changes is presented in Appendix M.

10.0 Maps:

Updated copies of the following maps are included with this document. These mapsheets have been updated to show new proposed development and to update the status of existing openings with BC Timber Sales operating areas.

Mapsheets: College Creek, Robson Ridge, Bull Dog, Big Sheep, North Whatshan, South Whatshan, Eagle, Limpid and Ymir

To the best of my knowledge, this FDP amendment (#11) meets the requirements of the Forest Practices Code of British Columbia Act (FPCA), the regulations, and the instructions to the Arrow Boundary District Licensees with regards to FDP standards.

I request that you review FDP Amendment #11 and if it meets with your satisfaction, that you give effect to this amendment in accordance with Section 41 (1) of the FPC of BC Act.

I certify that I have reviewed this document and, while I did not personally supervise the work described, I have determined that this work has been done to standards acceptable of a Registered Professional Forester.

Certified by (RPF):
BCTS Planning Forester

____

Date: _______________

BCTS Forester (RPF)
Acknowledgement:

____

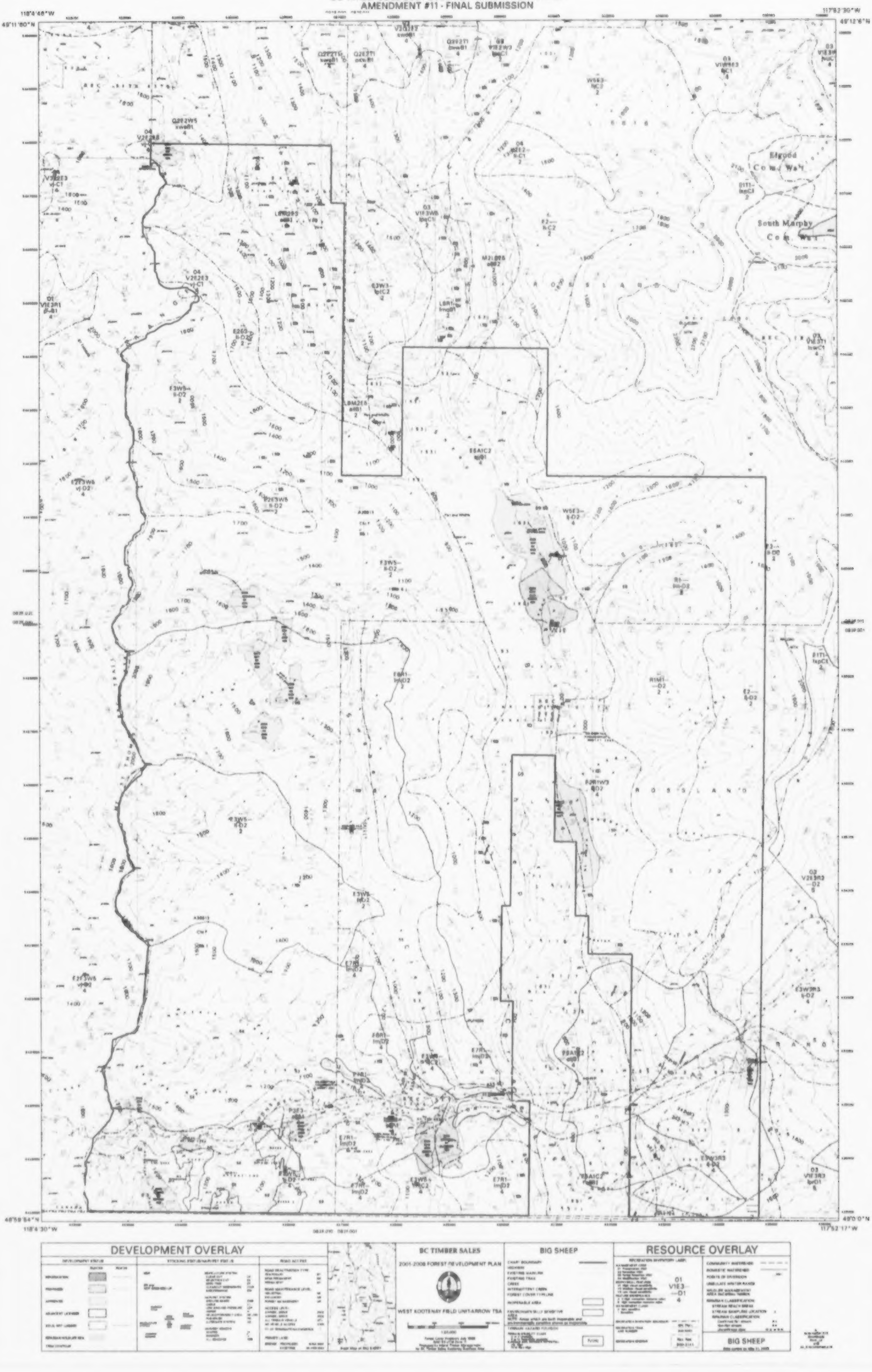
Date: _______________

Approved By:
Section 41(1) of the FPC of BC Act

____
District Manager
Or Authorized Person

Date: _______________

BC Timber Sales 2001-2006 FDP-ARROW TSA/TFL 23
AMENDMENT #11 - FINAL SUBMISSION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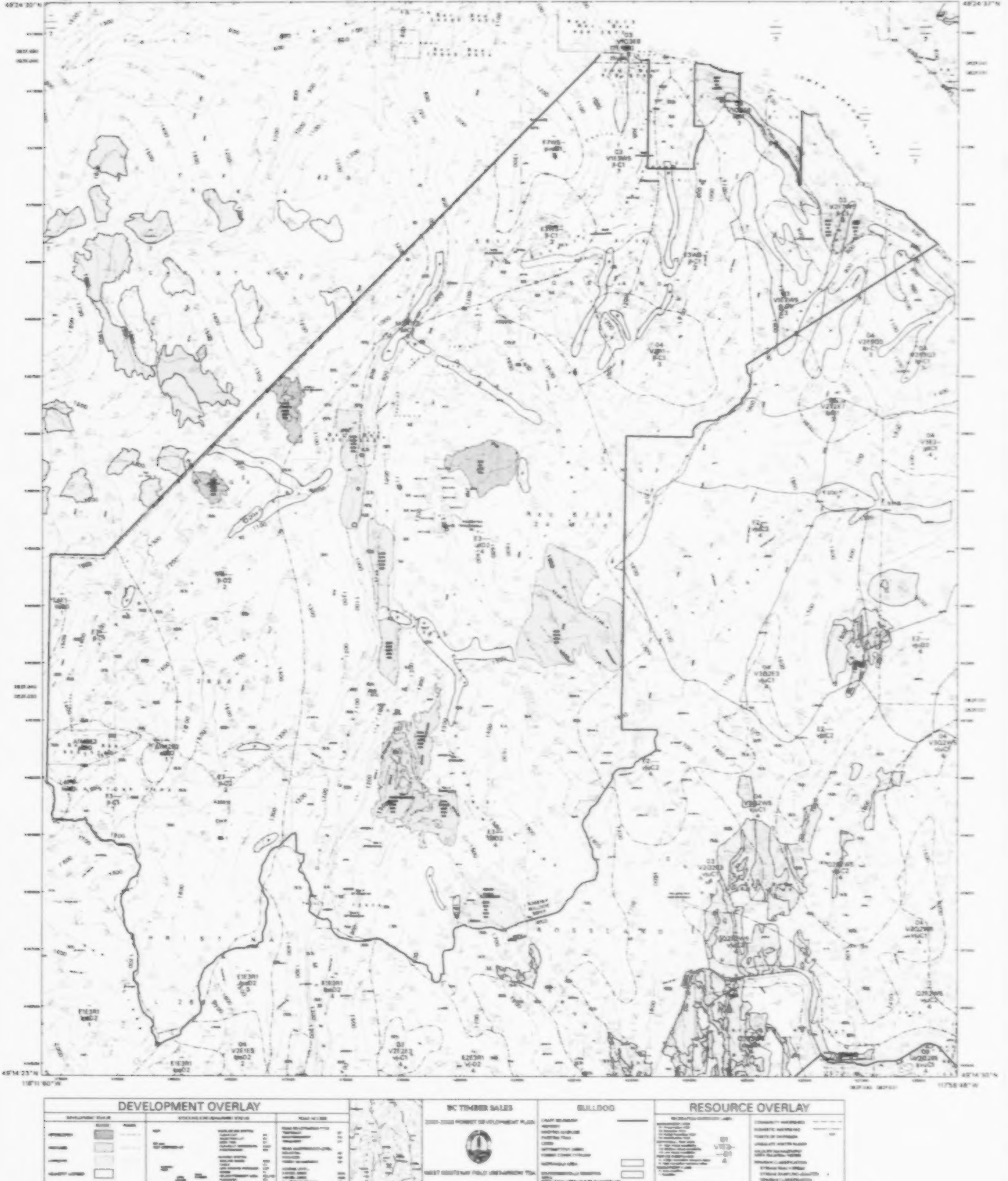
South Murphy Com. Wat
ROSSLAND
DEVELOPMENT OVERLAY
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
WEST KOOTENAY FIELD UNIT-ARROW TSA
BIG SHEEP
CHART BOUNDARY
HIGHWAY
EXISTING MAINLINE
EXISTING TRAIL
CREEK
INTERMITTENT CREEK
FOREST COVER TYPELINE
INOPERABLE AREA
ENVIRONMENTALLY SENSITIVE AREA
TERRAIN HAZARD POLYGON
RESOURCE OVERLAY
01
V1E3
D1
4
COMMUNITY WATERSHED
DOMESTIC WATERSHED
POINTS OF DIVERSION
UNGULATE WINTER RANGE
WILDLIFE MANAGEMENT AREA
RIPARIAN CLASSIFICATION
STREAM REACH BREAK
STREAM SAMPLING LOCATION
BIG SHEEP

BC Timber Sales 2001-2006 FDP-ARROW TSA/TFL 23
AMENDMENT #11 - FINAL SUBMISSION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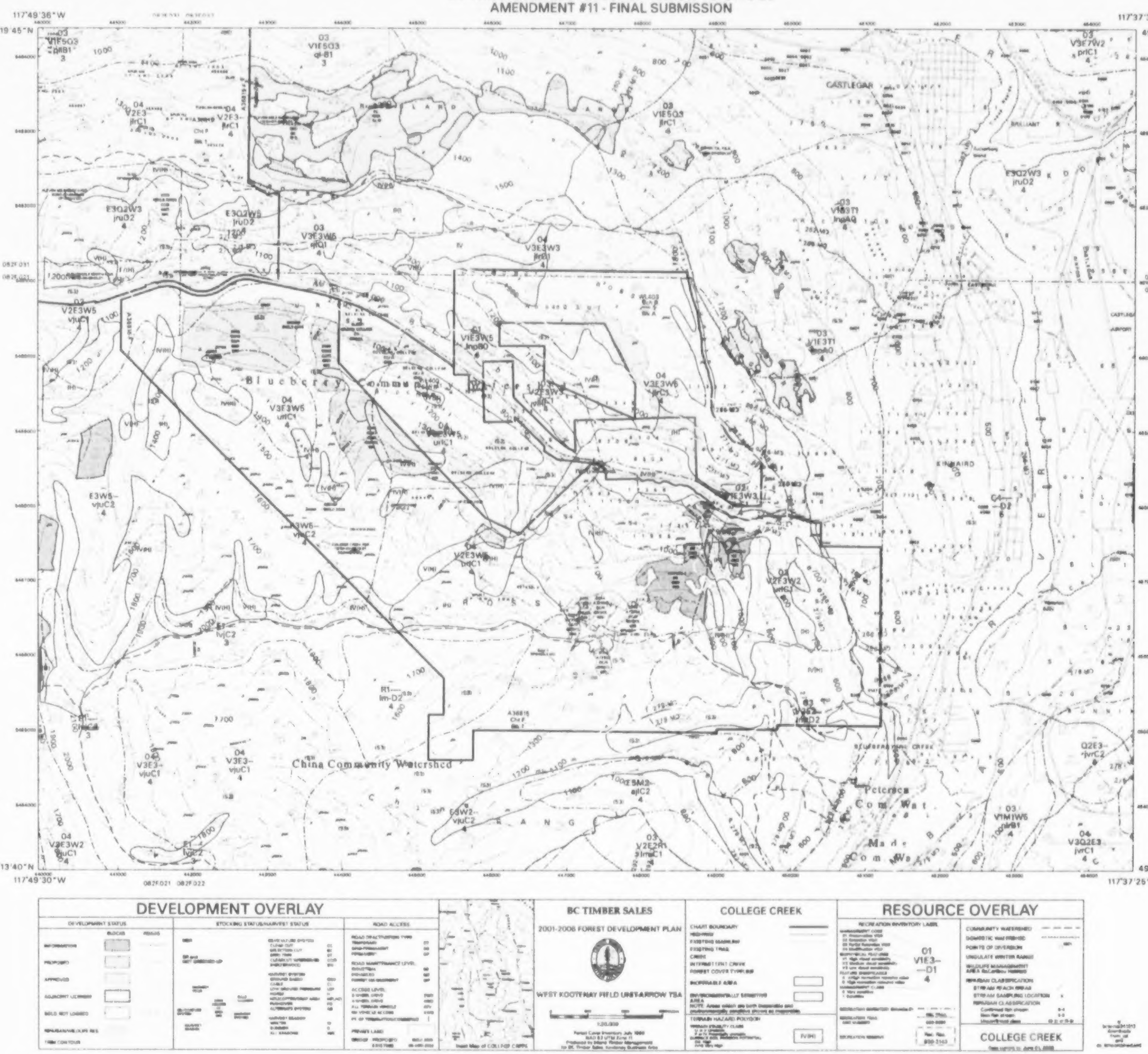
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
WEST KOOTENAY FIELD UNIT-ARROW TSA
BULLDOG
RESOURCE OVERLAY
BULLDOG

BC Timber Sales 2001-2006 FDP-ARROW TSA/TFL 23
AMENDMENT #11 - FINAL SUBMISSION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082F022
082F031
082F032
CASTLEGAR
BRILLIANT
KINNAIRD
Blueberry Community Watershed
China Community Watershed
Peterson Com. Wat.
Merry Com. Wat.
CASTLEGAR AIRPORT
DEVELOPMENT OVERLAY
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
WEST KOOTENAY FIELD UNIT-ARROW TSA
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COLLEGE CREEK
RESOURCE OVERLAY
01
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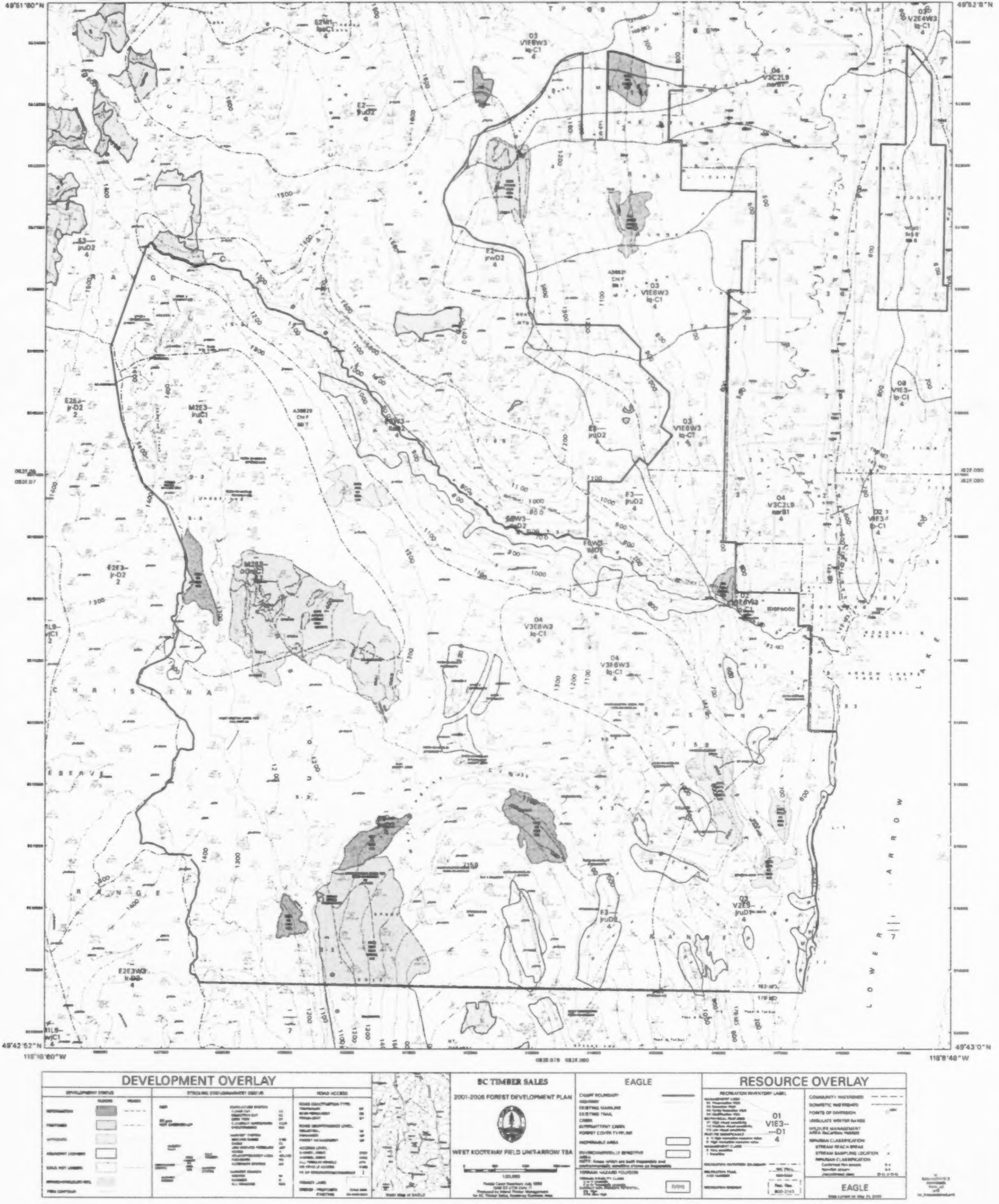
COLLEGE CREEK

BC Timber Sales 2001-2006 FDP-ARROW TSA/TFL 23
AMENDMENT #11 - FINAL SUBMISSION



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C H R I S T I N A
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2001-2006 FOREST DEVELOPMENT PLAN
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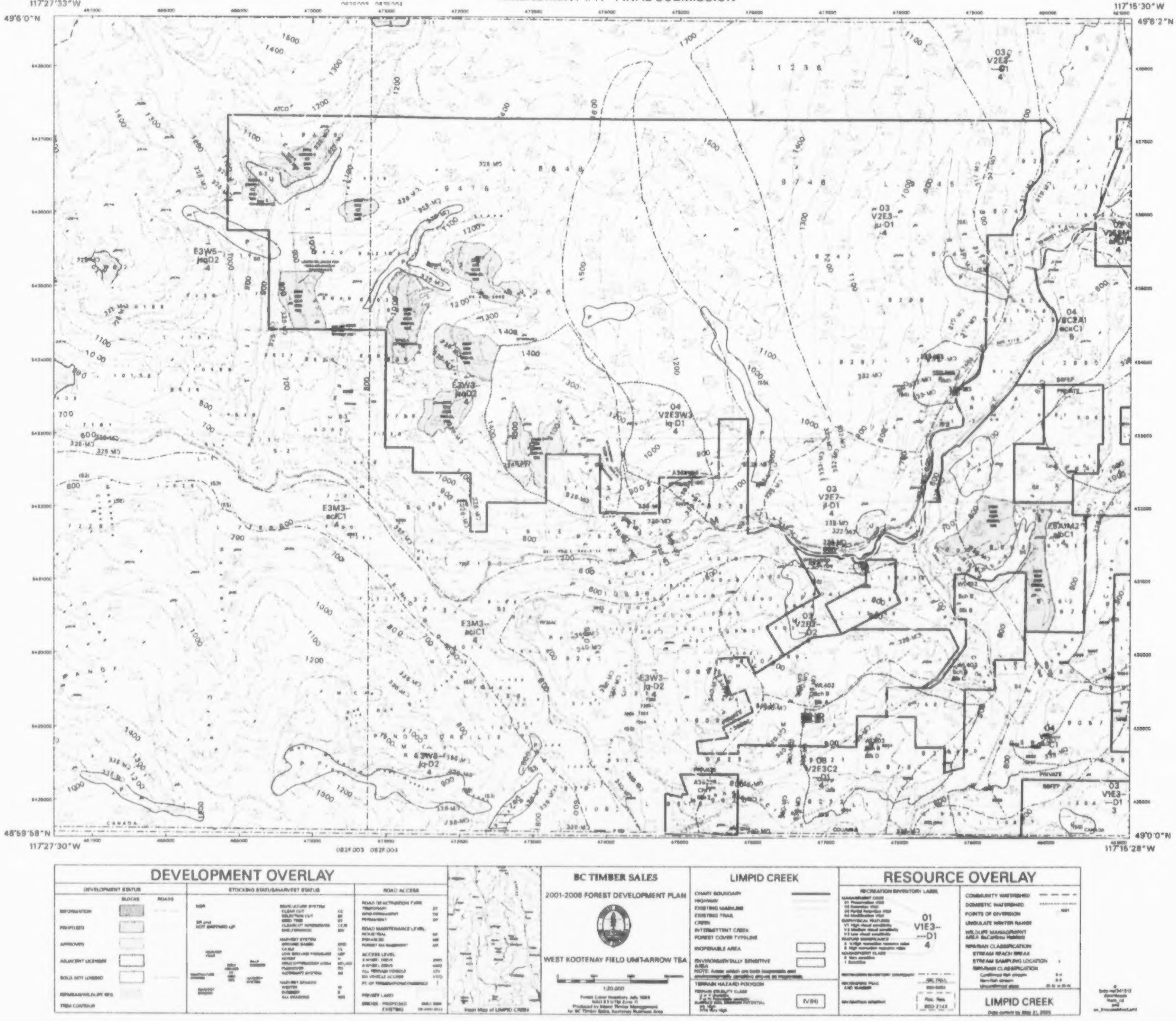
BC Timber Sales 2001-2006 FDP-ARROW TSA/TFL 23
AMENDMENT #11 - FINAL SUBMISSION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E3M3-
acjC1
4
E3W3-
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4
E3W8-
jq-D2
4
03
V2E3-
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jq-D1
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V2E7-
jl-D1
4
04
BC2A1
acjC1
5
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acjC1
03
V2E3C2
D1
4
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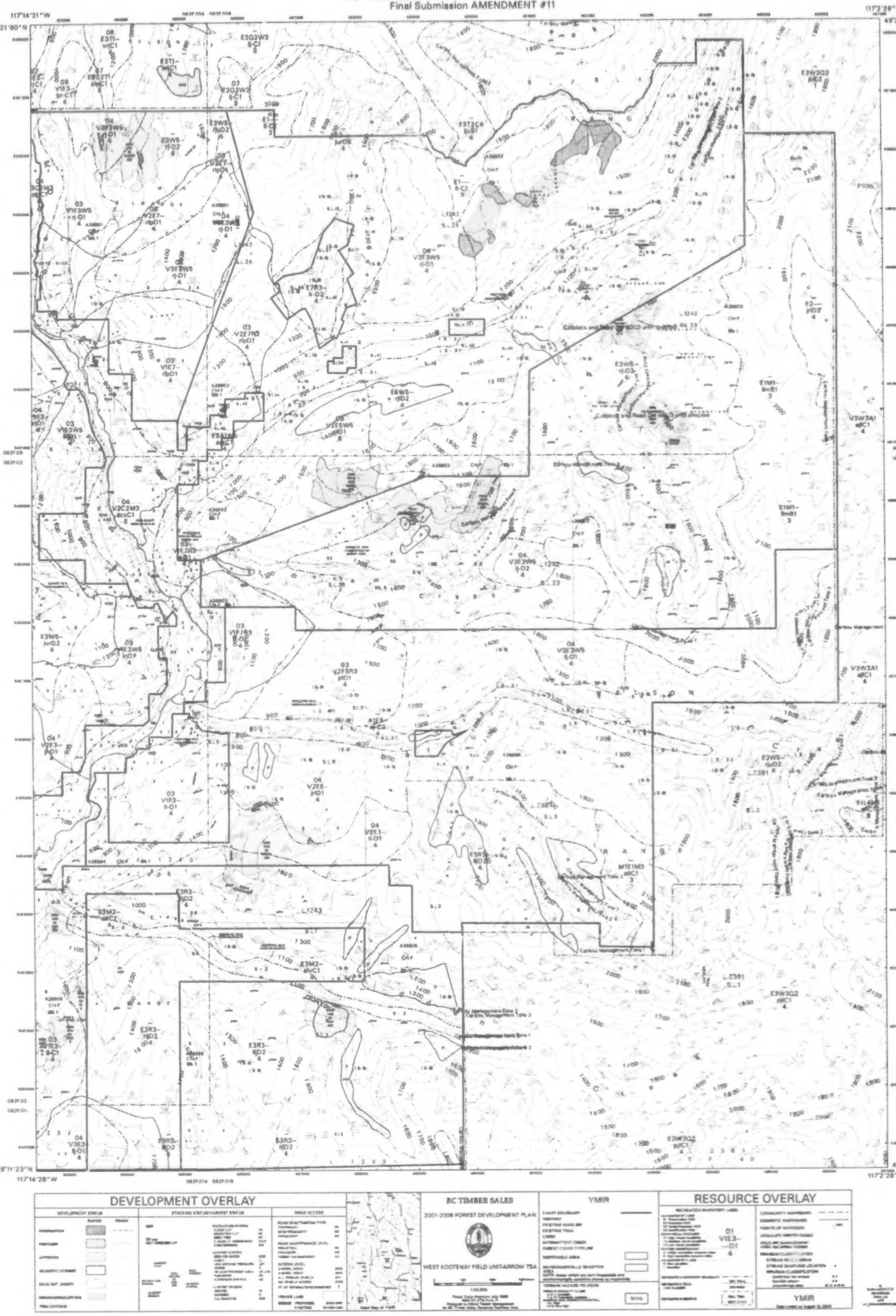
D1
3
CANADA
COLUMBIA
PRIVATE
DEVELOPMENT OVERLAY
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
WEST KOOTENAY FIELD UNIT-ARROW TSA
1:20,000
LIMPID CREEK
RESOURCE OVERLAY
01
V1E3-
D1
4
IV(H)
LIMPID CREEK

BC Timber Sales 2001-2006 FDP-ARROW TSA/TFL 23
Final Submission AMENDMENT #11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082F.014
082F.015
082F.025
082F.035
082F.02
082F.01
DEVELOPMENT OVERLAY
DEVELOPMENT STATUS
STOCKING STATUS/HARVEST STATUS
ROAD ACCESS
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
WEST KOOTENAY FIELD UNIT-ARROW TSA
1:20,000
Index Map of YMIR
YMIR
CHART BOUNDARY
INOPERABLE AREA
ENVIRONMENTALLY SENSITIVE AREA
TERRAIN HAZARD POLYGON
RESOURCE OVERLAY
RECREATION INVENTORY LABEL
01
VIE3-
--D1
4
COMMUNITY WATERSHED
DOMESTIC WATERSHED
RIPARIAN CLASSIFICATION
STREAM SAMPLING LOCATION
YMIR
Carbou Management Zone 1
Carbou Management Zone 2
L1242
L1243
L2381
E3W5-
rj-D2
E1M1-
BmB1
3
V3W3A1
aIC1
4
E3R3-
llD2
4

Appendix A - HARVEST SUMMARY TABLE

TSL-Blk or Map ID and Unit#	BS-19*	A 62692-1*	BS-18*	BS-16	BS-17	BS-4	RR-6	RR-7	RR-8
Composite Map Name	Big Sheep	Santa Rosa	Big Sheep	Big Sheep	Big Sheep	Big Sheep	Robson Ridge	Robson Ridge	Robson Ridge
Map Reference	82E010	82F001	82F001	82F001	82F011	82F011	82F021	82F021	82F021/82F031
Geographic Location	Santa Rosa	Santa Rosa	Santa Rosa	Big Sheep Ck	Esling Creek	Esling Creek	Gem Hill	Gem Hill	Moberly Ck
Lat. / Long.	49° 0' / 118° 0'	49° 0' / 117° 58'	49° 0' / 117° 58'	49° 6' / 117° 56'	49° 6' / 117° 56'	49° 6' / 117° 57'	49° 17' / 117° 52'	49° 17' / 117° 54'	49° 18' / 117° 57'
Anticipated Sale Date	2005	2005	2005	2005	2005	2005	2005	2005	2005
Gross Area (ha)	17	42.1	30	98	75	144	26	2	41.7
Wildlife Tree Patches (%)	6	6	6	6	6	6	10	0	8
Other Reserves (ha)	0	0	0	0	0	0	0	0	0
Net Area to Reforest (ha)	16	39.6	28.2	92.1	70.5	135.4	23.4	2	38.4
Total Harvest Volume (m3)	3300	6125	6600	13800	17250	8000	3600	400	6800
Silviculture System	CC/Res	SC	CC/Res	SC	CC/ Res	Select	CC/ Res	CC	CC/ Res
Harvest Method	Ground	Ground/Cable/PO	Ground/Cable	Ground/Cable	Ground/Cable	Ground	Ground	Ground	Ground
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N501	N501	N501	N501	N501	N501	N508	N508	N509
Mapped BEC	ICHdw	ICHdw	ICHdw	ICHdw	ICHdw	ICHdw	ICHdw	ICHmw2	ICHmw2/ICHdw
Natural Disturbance Type	3	3	3	3	3	3	3	2	2 / 3
Biodiversity Emphasis	Med	Med	Med	Med	Med	Med	Med	Low	Med
Resource Management Zone	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated
Watershed Name	Swehaw 1	Swehaw 4	Swehaw 1	N/A	N/A	N/A	Blueberry C.W.	Blueberry C.W.	Moberly, Moberly 1
Watershed Class	Domestic 3s	Domestic 3s	Domestic 3s	N/A	N/A	N/A	Community	Community	Domestic 3, 3s
Proposed ECA %	6.20%	14.90%	6.20%	N/A	N/A	N/A	26.47%	(Henderson 2003)	28.6% / 33.5%
Riparian Classifications	S6	S6	S6	S5	S5	S3	S3	S3	S-6
Wildlife Habitat Status	GWM	UWR	UWR	GWM	GWM	GWM	GWM	GWM	GWM
Available Old (ha)	0	0	0	0	0	0	0	0	N/A
Available Old/Mature (ha)	990	990	990	990	990	990	76.2	314.9	N/A
Forest Cover Label	Polygon 191 Bl(SeFdiLw) 5305-15	Polygon 656 Lw(PliFdi) 4306-22	Polygon 822 Pli(LwFdi) 6316-18	Polygon 268 Pli(LwFdi) 5315-20	Polygon 788 Fdi(Se) 4306-19	Polygon 697 LwFdi(PliAt) 4305 22	Polygon 331 Fdi(PliEp) 6304-15	Polygon 30 Pli(Lw) 6315-15	Polygon 316 Hw(PwSe) 5206-10
Green-up of adjacent Block	SR/NSR	N/A	N/A	N/A	N/A	N/A	SR/NSR	SR	SR/NSR
Detailed Terrain Analysis	N/A	N/A	N/A	N/A	N/A	N/A	Req'd	N/A	N/A
Flat Over Steep Analysis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Soil Erosion Field Assessment	N/A	N/A	N/A	N/A	N/A	N/A	Req'd	Req'd	N/A
Visual Impact Assessment	N/A	Completed	N/A	N/A	N/A	N/A	Req'd	Req'd	Req'd
Archaeological Assessment	N/A	Completed	Req'd	Req'd	Req'd	Req'd	Req'd	Req'd	N/A
Avalanch Analysis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pest Incidence Survey	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Current Category Status	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Approved	Proposed Cat A	Proposed Cat A	Proposed Cat A
Joint Approval Required?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

***For Units BS-18, BS-19 and A62692-1, the *Dewdney Trail Recreation Reserve* requires a 200m reserve**

Appendix A - HARVEST SUMMARY TABLE

TSL-Blk or Map ID and Unit#	LI-05	LI-06	LI-7	LI-8	LI-9	LI-10	LI-11	LI-12	LI-13
Composite Map Name	Limpid	Limpid	Limpid	Limpid	Limpid	Limpid	Limpid	Limpid	Limpid
Map Reference	82F003	82F003	82F003	82F004	82F004	82F004	82F004	82F003	82F004
Geographic Location	Rosebud Lk	Rosebud Lk	Limpid Ck	Limpid Ck	Limpid Ck	Limpid Ck	McCormick Ck	Limpid Ck	Limpid Ck
Lat. / Long.	49° 2' / 117° 17'	49° 1' / 117° 16'	49° 3' / 117° 24'	49° 3' / 117° 23'	49° 3' / 117° 22'	49° 3' / 117° 23'	49° 2' / 117° 22'	49° 4' / 117° 24'	49° 4' / 117° 22'
Anticipated Sale Date	2005	2005	2005	2005	2005	2005	2005	2005	2005
Gross Area (ha)	53	47	38.3	50.4	48	33	45	12	47
Wildlife Tree Patches (%)	5	5	7	5	7	7	5	7	7
Other Reserves (ha)	0	0	0	0	0	0	0	0	0
Net Area to Reforest (ha)	50.4	44.7	35.6	47.9	44.6	30.7	38	11.2	43.7
Total Harvest Volume (m3)	13250	11750	10500	10500	13500	8700	10000	3600	14100
Silviculture System	CC/ Res	CC/ Res	CC/ Res	CC/ Res	CC/ Res	CC/ Res	CC/ Res	CC	CC/ Res
Harvest Method	Ground/Cable	Ground/Cable	Ground	Ground/Cable	Ground/Cable	Ground/Cable	Ground/Cable	Ground	Ground/Cable
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N504	N504	N504	N504	N504	N504	N504	N504	N504
Mapped BEC	ICHdw	ICHdw	ICHdw/ICHxw	ICHdw	ICHdw/ICHmw2	ICHdw/ICHmw2	ICHdw/ICHmw2	ICHdw	ICHdw/ICHmw2
Natural Disturbance Type	3	3	3 / 4	3 / 4	2 / 3	2 / 3	2 / 3	3	2 / 3
Biodiversity Emphasis	Med	Med	Med	Med	Med	Med	Med	Med	Med
Resource Management Zone	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated
Watershed Name	N/A	N/A	N/A	N/A	N/A	N/A	McCormick	N/A	N/A
Watershed Class	N/A	N/A	N/A	N/A	N/A	N/A	Domestic 3	N/A	N/A
Proposed ECA %	N/A	N/A	N/A	N/A	N/A	N/A	37.90%	N/A	N/A
Riparian Classifications	N/A	N/A	N/A	N/A	N/A	N/A	S-3	N/A	N/A
Wildlife Habitat Status	UWR	UWR	UWR	UWR	GWM	UWR	UWR	GWM	GWM
Available Old (ha)	-25.5	-25.5	25.5 / 0	-25.5	-25.5 / 653.5	-25.5 / 653.5	-25.5 / 653.5	-25.5	-25.5 / 653.5
Available Old/Mature (ha)	709.1	709.1	709.1 / 166.7	709.1	709.1 / 0.0	709.1 / 0.0	709.1 / 0.0	709.1	709.1 / 0.0
Forest Cover Label	Polygon 1319 Pli(Lw) 5416-23	Polygon 700 PliLw 3306-24	Polygon 337 FdiBg(PliCwHw) 6404-21	Polygon 336 FdiBg(LwAt) 5404-21	Polygon 449 Fdi(Lw) 4306-21	Polygon 453 Fdi(LwPliCwHw) 8414-18	Polygon 560 Fdi(LwAt) 5309-19	Polygon 279 Pli(FdiBgLw) 5305-20	Polygon 235 Pli(Lw) 5307-21
Green-up of adjacent Block	N/A	N/A	N/A	SR	N/A	N/A	SR	N/A	SR
Detailed Terrain Analysis	Req'd	Req'd	N/A	N/A	N/A	N/A	DONE	N/A	N/A
Flat Over Steep Analysis	Req'd	Req'd	N/A	Req'd	N/A	N/A	N/A	N/A	Req'd
Soil Erosion Field Assessment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Visual Impact Assessment	Req'd	N/A	N/A	N/A	N/A	N/A	DONE	N/A	N/A
Archaeological Assessment	Req'd	Req'd	DONE	Req'd	N/A	N/A	DONE	N/A	N/A
Avalanch Analysis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pest Incidence Survey	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Current Category Status	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A
Joint Approval Required?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix A - HARVEST SUMMARY TABLE

TSL-Blk or Map ID and Unit#	CC-6	CC-7	CC-8	BU-9	BU-10	BU-11	BU-12	A72329
Composite Map Name	College	College	College	Bulldog	Bulldog	Bulldog	Bulldog	Bulldog
Map Reference	82F022	82F022	82F022	82E040	82E040	82E040	82E040	82E030/40
Geographic Location	Blueberry Ck	Blueberry Ck	Blueberry	Peter Creek	Porcupine Ck	Porcupine Ck	Porcupine Ck	Porcupine Ck
Lat. / Long.	49° 17' / 117° 47'	44° 16' / 117° 45'	49° 19' / 117° 46'	49° 20' / 118° 7'	49° 18' / 118° 4'	49° 19' / 118° 7'	49° 18' / 118° 7'	49° 17' / 118° 6'
Anticipated Sale Date	2005	2005	2005	2005	2005	2005	2005	2005
Gross Area (ha)	133	96	32	77	258	50	33	203.5
Wildlife Tree Patches (%)	10	10	10	4	8	4	8	8
Other Reserves (ha)	0	0	0	0	0	0	0	0
Net Area to Reforest (ha)	119.7	86.4	28.8	73.9	237.3	48	30.4	170.6
Total Harvest Volume (m3)	13300	17200	4400	14600	56025	10350	5625	51000
Silviculture System	CC/ Res	CC/Res	CC/Res	CC/ Res	CC/ Res	CC/Res	CC/Res	CC/ Res
Harvest Method	Ground	Ground/Cable	Ground	Ground	Ground	Ground	Ground	Ground
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N508	N508	N508	N509	N509	N509	N509	N509
Mapped BEC	ICHdw/ICHmw2	ICHdw/ICHmw2	ICHdw/ICHmw2	ICHdw	EssFwc1/ESSFwc4/ICHmw2	ICHdw	ICHdw	ICHmw2/ESSFwc1
Natural Disturbance Type	2 / 3	2	2 / 3	3	2	3	3	2
Biodiversity Emphasis	Low / Med	Low	Low / Med	Med	Med	Med	Med	Med
Resource Management Zone	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated
Watershed Name	Blueberry C.W.	Blueberry C.W.	Blueberry C.W.	Dog Creek SB 1	Dog Creek SB 5	Dog Creek SB 1	Dog Creek SB 4	Dog Creek SB 4
Watershed Class	Community	Community	Community	Domestic 3s	Domestic 3s	Domestic 3s	Domestic 3s	Domestic 3s
Proposed ECA %	26.47%	(Henderson	2003)	9.90%	57.90%	9.90%	22.60%	22.60%
Riparian Classifications	S-3	(Henderson	2003)	S3	S5	S3	S3	S-5
Wildlife Habitat Status	GWM	GWM	GWM	GWM	GWM	GWM	GWM	GWM
Available Old (ha)	0 / 0	0 / 0	0 / 0	N/A	N/A	N/A	N/A	N/A
Available Old/Mature (ha)	76.2 / 314.9	76.2 / 314.9	76.2 / 314.9	N/A	N/A	N/A	N/A	N/A
Forest Cover Label	Polygon 2 LwPli(Fdi) 5306-20	Polygon 72 LwPli(Fdi) 7307-14	Polygon 8 FdiLw(Pli) 7416-17	Polygon 226 Lw(PliSeFdi) 4306-19	Polygon 352 PliLw(Fdi) 4305-24	Polygon 284 PliLw(Fd) 4306-22	Polygon 402 Pli(Lw) 4306-21	Polygon 80 Pli(FdiLw) 4304-20
Green-up of adjacent Block	N/A	FTG	NSR	N/A	SR/FTG	N/A	N/A	SR
Detailed Terrain Analysis	N/A	Req'd	N/A	N/A	Req'd	Req'd	Req'd	N/A
Flat Over Steep Analysis	N/A	N/A	N/A	N/A	Req'd	Req'd	N/A	N/A
Soil Erosion Field Assessment	Req'd	Req'd	Req'd	N/A	N/A	N/A	N/A	N/A
Visual Impact Assessment	Req'd	Req'd	Req'd	N/A	N/A	N/A	N/A	N/A
Archaeological Assessment	Req'd	Req'd	Req'd	Req'd	Req'd	Req'd	Req'd	Done
Avalanch Analysis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pest Incidence Survey	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Current Category Status	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A
Joint Approval Required?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix A - HARVEST SUMMARY TABLE

TSL-Blk or Map ID and Unit#	NW11	A75965	SW9**	SW10/A75697	A70241	A75259	EC16	YM-12	YM-13
Composite Map Name	Whatshan North	Whatshan South	Whatshan South	Whatshan South	Eagle Cr	Eagle Cr	Eagle Cr.	Ymir	Ymir
Map Reference	82L010	82E100	82E100	82E100	82E089	82E079	82E079	82F025	82F025
Geographic Location	W. Whatshan	East Barnes	East Barnes	East Barnes	Edgewood Face	95-Worthington	15km Worthington	Oscar Cr	Oscar Cr
Lat. / Long.	50° 2' / 118° 3'	49° 59' / 118° 8'	49° 57' / 118° 8'	49° 57' / 118° 8'	49° 50' / 118° 12'	49° 46' / 118° 15'	49° 43' / 118° 14'	49° 17' / 117° 10'	49° 17' / 117° 8'
Anticipated Sale Date	2005	2005	2005	2005	2005	2005	2005	2005	2005
Gross Area (ha)	100.0	113.0	40.0	30.7	83.3	419.0	278.8	63	54.5
Wildlife Tree Patches (%)	10.0	10.0	10.0	3.0	10.0	10.0	10.0	7	7
Other Reserves (ha)	0.0	0.0	0.0	0.0	0.0	38.6	0.0	0	0
Net Area to Reforest (ha)	90	103	54.3	29.8	63	345	251	59	51
Total Harvest Volume (m3)	20000	30900	21600	7000	23800	103500	69300	15750	13500
Silviculture System	CC/Res	Clearcut/Res	Clearcut	Clearcut	Clearcut/Res	CCRes/SC	CC/Res	CC/Res	CC/ Res
Harvest Method	Ground/Cable	Ground	Ground	Ground	Ground	Ground	Ground/Cable	Ground/Cable	Ground/Cable
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N520	N520	N520	N520	N519	N519	N519	N505	N505
Mapped BEC	EssFwc1/ESSFwc4/ICHmw2	EssFwc1/ESSFwc4/ICHmw2	ICHmw2	ICHmw2	ICHmw2	ICHmw2	ICHmw2/ESSFwc1	EssFwc1/ESSFwc4	EssFwc1/ESSFwc4
Natural Disturbance Type	1 / 2	1 / 2	2	2	2	2	2	2	2
Biodiversity Emphasis	Low / Med	Low / Med	Low	Low	Low	Low	Low / Med	Med	Med
Resource Management Zone	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated
Watershed Name	N/A	N/A	Elvidge Cr.	Elvidge Cr.	Mcintosh/Robinson	N/A	N/A	N/A	N/A
Watershed Class	N/A	N/A	Domestic 2	Domestic 2	Domestic 2/3	N/A	N/A	N/A	N/A
Proposed ECA %	N/A	N/A	9.90%	9.90%	12.5%/13.1%	N/A	N/A	N/A	N/A
Riparian Classifications	S-6	S-6	Req	Req	Required	S-2	N/A	N/A	N/A
Wildlife Habitat Status	GWM	GWM	GMW	GMW	GMW	GMW	GMW	Caribou	Caribou
Available Old (ha)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0 / 0.0	0.0 / 0.0
Available Old/Mature (ha)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1175.9 / 1359.6	1175.9 / 1359.6
Forest Cover Label	Polygon 542 Pl(FL) 5214-14	Polygon 2009 PlF(L) 4305-18	Polygon 90 LPl(F) 4306-20	Polygon 176 FL(E) 5305-18	Polygon 207 Pli 4307-19	Polygon 53 Pli 4206-16	Polygon 156 Pli 4306-18	Polygon 21 Pli 6336-14	Polygon 36 Bl(Pli) 8217-10
Green-up of adjacent Block	Sold	SR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Detailed Terrain Analysis	N/A	N/A	N/A	N/A	Completed	N/A	N/A	N/A	N/A
Flat Over Steep Analysis	N/A	N/A	N/A	N/A	Completed	N/A	N/A	N/A	Req'd
Soil Erosion Field Assessment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Visual Impact Assessment	N/A	Completed	N/A	Completed	Completed	N/A	N/A	Req'd	N/A
Archaeological Assessment	N/A	Completed	N/A	Completed	Required	Completed	Req'd	N/A	N/A
Avalanch Analysis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pest Incidence Survey	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Current Category Status	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A	Proposed Cat A
Joint Approval Required?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix A - HARVEST SUMMARY TABLE

TSL-Blk or Map ID and Unit#	HARVEST SUMMARY TABLE LEGEND
Composite Map Name	Refers to the Operating Area covered by the 1:20 000 Forest Development Plan maps
Map Reference	Refers to 1:20 000 Forest Cover Mapsheet
Geographic Location	Refers to the local geographic name
Lat. / Long.	Latitude / Longitude (block location)
Anticipated Sale Date	The year that a Timber Sale is expected to be sold
Gross Area (ha)	Total block area in ha
Wildlife Tree Patches (%)	The area that will be left unharvested for wildlife trees
Other Reserves (ha)	The area to be left unharvested for biodiversity or other reasons
Net Area to Reforest (ha)	The area that will be reforested upon completion of harvesting
Total Harvest Volume (m3)	The volume of timber expected to be harvested
Silviculture System	Select=Selective or Partial-cut Harvesting, Clearcut/res.=Clearcut with reserves, PO=Pushover/Pop-up Harvesting
Harvest Method	Gnd = Ground Based, LPG = Low Ground Pressure Equipment, Heli = Helicopter, Cable = Skyline/HighLead Overhead Cable Systems
Harvest Season	W = harvest on a snowpack, S = harvesting in dry conditions
Landscape Unit	Landscape Unit number from higher level plans
Mapped BEC	Biogeoclimatic Ecosystem Classification
Natural Disturbance Type	Natural Disturbance Type from the Biodiverstiy Guidebook
Biodiversity Emphasis	Biodiversity Emphasis Option from the Kootenay-Boundary Land Use Plan
Resource Management Zone	Resource Management Zone identified in the Kootenay-Boundary Land Use Plan
Watershed Name	The name of the licenced watershed
Watershed Class	Community Watershed, or 1=a face unit domestic watershed, 2=a domestic watershed<500ha, 3=a domestic watershed>500ha
Proposed ECA %	Equivalent Clearcut Area % calculated in accordance with Watershed Assessment Procedure Guidebook
Riparian Classifications	Classification of streams in accordance with the Riparian Management Area
Wildlife Habitat Status	GWM = General Wildlife Measures, UWR = Ungulate Winter Range, Caribou = Caribou
Available Old (ha)	The area of Old Forest that is available for harvest in accordance with Seral Tables
Available Old/Mature (ha)	In Previous Plan = the block was approved in a previous development plan and the area deducted from the available mature and old at that time
Forest Cover Label	The label on the Forest Cover Map and used in the calculations to produce the Seral Tables
Green-up of adjacent Block	N/A = not adjacent or the adjacent area is greened-up, SR = adjacent block is stocked but not greened-up, NSR = adjacent block is not stocked
Detailed Terrain Analysis	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Flat Over Steep Analysis	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Soil Erosion Field Assessment	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Visual Impact Assessment	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Archaeological Assessment	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Avalanch Analysis	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Pest Incidence Survey	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Current Category Status	Approved = Approved in a previous plan, Proposed = newly proposed for approval, Information = information and may be proposed in a future plan
Joint Approval Required?	Yes = block that requires approval of a Designated Environment Official as well as the District Manager
Change From Last Plan?	No = a block that has no changes from the last FDP

NOTE: Prior to final signoff of Site Plan, the Prescriber should confirm any updates to the assessment table.

Appendix B - ENGINEERING ACCESS MANAGEMENT TABLE

Map Reference	FSR # 11250-30-_, Name or TSL #	Branch / Spur	Prim. Resp.	Type of Road	Length / Location Nearest 0.1km	Current Access Level	Type / Year Works Proposed			Proposed Access Level	Bridges and Culverts over 2,000 mm	Terrain Stability Field Assessment	Archaeological Impact Assessment	Visual Impact Assessment	Surface Soil Erosion Assessment	Stream, Wetland and Lake Riparian Class	Dev. Status	Joint Sign-off / Approval
							C	M	D									
College Ck	CC-6	BR1 (CCR-04)	BCTS	P	2.4	N/A	2005			DS-4WD	1-CMP-maybe OBC* or Bridge)	N/A	Required	Required	N/A	S-3	P	N/A
College Ck	CC-7	BR1 (CCR-04)	BCTS	P	4.8	N/A		2005		DS-4WD	1- Bridge or CMP	Required	N/A	N/A	N/A	S-5	P	N/A
College Ck	CC-7	Spur1 (CCR-05)	BCTS	T	1.2	N/A	2005		2007	DS-ATV	N/A	Required	Required	N/A	N/A	N/A	P	N/A
College Ck	CC-7	Spur2 (CCR-06)	BCTS	T	1.0	N/A	2005		2007	DS-ATV	N/A	Required	Required	N/A	N/A	N/A	P	N/A
College Ck	CC-8	Spur 1 (CC-07)	BCTS	T	0.5	N/A	2005		2007	DS-ATV	N/A	N/A	Required	Required	N/A	N/A	P	N/A
Limpid Ck	LI9+ LI10	LIR-03(new+existing)	BCTS	T	1.20	N/A	2005		2007	DS-ATV	N/A	N/A	N/A	N/A	N/A	S-6	P	N/A
Limpid Ck	LI 12	LIR-04	BCTS	T	1.00	N/A	2005		2007	DP-XWD	N/A	N/A	N/A	N/A	N/A	S-6	P	N/A
Limpid Ck	LI 13	LIR-05	BCTS	T	1.80	N/A	2005		2007	DP-XWD	N/A	flat over steep	N/A	N/A	N/A	S-6	P	N/A
Limpid Ck	LI 13	LIR-06	BCTS	T	1.30	N/A	2005		2007	DP-XWD	N/A	flat over steep	N/A	N/A	N/A	S-6	P	N/A
Limpid Ck- Rosebud Lk	LI05 + LI06	LIR02	BCTS	P	1.2	N/A	2005			DP-XWD	(OBC* maybe required)	Required	Required	Required	N/A	S-4	P	N/A
Limpid Ck- Rosebud Lk	LI05	LIR07	BCTS	T	1.2	N/A	2005			DP-XWD	N/A	Required	Required	Required	N/A	S-4	P	N/A
Ymir	YM-12	YMR-05	BCTS	P	1.4	N/A	2005			DP-4WD	N/A	N/A	N/A	Required	N/A	S-6	P	N/A
Ymir	YM-13	YMR-06	BCTS	P	1.2	N/A	2005			DP-4WD	N/A	flat over steep	N/A	N/A	N/A	S-6	P	N/A
Whatshan N.	NW11	Stub 1	BCTS	T	0.4	N/A	2005			DP-XWD	N/A	N/A	N/A	N/A	N/A	S-6	P	N/A
Whatshan N.	NW11	Spur A	BCTS	P	0.9	N/A	2005			DP-XWD	N/A	N/A	N/A	N/A	N/A	S-6	P	N/A
Whatshan N.	NW11	Spur 1	BCTS	T	1	N/A	2005			DP-XWD	N/A	Required	N/A	N/A	N/A	S-6	P	N/A
Whatshan S.	A75965	Spur 1	BCTS	P	2.2	N/A	2005			DP-XWD	N/A	N/A	Completed	Completed	N/A	S-6	P	N/A
Whatshan S.	A75965	Spur 2	BCTS	P	1	N/A	2005			DP-XWD	N/A	N/A	Completed	Completed	N/A	S-6	P	N/A
Whatshan S.	A75965	Stub 1	BCTS	P	0.4	N/A	2005			DP-XWD	N/A	N/A	Completed	Completed	N/A	S-6	P	N/A
Whatshan S.	SW9 thru to SW10	Spur 1	BCTS	P	1.8	N/A	2005			DP-4WD	N/A	N/A	Completed	Completed	N/A	S-6	P	N/A
Eagle Creek	A70241	Spur 1	BCTS	P	1.4	N/A	2005			DP-XWD	N/A	Completed	Required	Completed	N/A	N/A	P	N/A
Eagle Creek	A70241	Spur 2	BCTS	P	0.5	N/A	2005			DP-XWD	N/A	Completed	Required	Completed	N/A	N/A	P	N/A
Eagle Creek	0095-Worthington	Br.14	BCTS	P	4.8	N/A	2005			DS-4WD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Eagle Creek	Block EC9	Spur 1	BCTS	T	0.9	N/A	2005		2007	DP-4WD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A

Appendix B - ENGINEERING ACCESS MANAGEMENT TABLE

Map Reference	FSR # 11250-30-_, Name or TSL #	Branch / Spur	Prim. Resp.	Type of Road	Length / Location Nearest 0.1km	Current Access Level	Type / Year Works Proposed			Proposed Access Level	Bridges and Culverts over 2,000 mm	Terrain Stability Field Assessment	Archaeological Impact Assessment	Visual Impact Assessment	Surface Soil Erosion Assessment	Stream, Wetland and Lake Riparian Class	Dev. Status	Joint Sign-off / Approval
							C	M	D									
Eagle Creek	Block EC9	Spur 1B	BCTS	T	1	N/A	2005		2007	DP-4WD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Eagle Creek	Block EC9	Spur 2	BCTS	T	1.3	N/A	2005		2007	DP-4WD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Eagle Creek	Block EC9	Spur 3	BCTS	T	1.4	N/A	2005		2007	DP-4WD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Eagle Creek	Block EC9	Spur 4	BCTS	T	0.5	N/A	2005		2007	DP-4WD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Eagle Creek	Block EC9	Spur 5	BCTS	P	2.4	N/A	2005			DP-4WD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Eagle Creek	Block EC9	Spur 5B	BCTS	T	0.4	N/A	2005		2007	DP-4WD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Eagle Creek	Block EC9	Spur 6	BCTS	P	1.2	N/A	2005			DP-4WD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Eagle Creek	Block EC9	Spur 6B	BCTS	T	0.2	N/A	2005		2007	DP-4WD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Eagle Creek	Block EC9	Spur 6C	BCTS	T	0.3	N/A	2005		2007	DP-4WD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Eagle Creek	EC16	Br 15	BCTS	P	1.8	N/A	2005			DP-4WD	N/A	N/A	Required	N/A	N/A	N/A	P	N/A
Eagle Creek	EC16	Spur 1	BCTS	P	2.2	N/A	2005			DP-4WD	N/A	N/A	Required	N/A	N/A	N/A	P	N/A
Bulldog (Dog Ck)	TSL A72329	Spur 1 (BUR-11)	BCTS	T	0.2	N/A	2005		2007	DS-ATV	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Bulldog (Dog Ck)	TSL A72329	Spur 2 (BUR-12)	BCTS	P	0.8	N/A	2005			DP-XWD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Bulldog (Dog Ck)	TSL A72329	Spur 3 (BUR-13)	BCTS	P	1.2	N/A	2005			DP-XWD	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Bulldog (Dog Ck)	TSL A72329	Spur 3A (BUR-14)	BCTS	T	0.2	N/A	2005		2007	DS-ATV	N/A	N/A	Completed	N/A	N/A	N/A	P	N/A
Bulldog (Dog Ck)	BU-11	Spur 1	BCTS	T	0.8	N/A	2005		2007	DS-ATV	N/A	N/A	Required	N/A	N/A	N/A	P	N/A
Bulldog (Dog Ck)	BU-10	Spur 1 (BUR-15)	BCTS	T	1.2	N/A	2005		2007	DS-ATV	N/A	N/A	Required	N/A	N/A	N/A	P	N/A
Bulldog (Dog Ck)	BU-10	Spur 2 (BUR-16)	BCTS	P	2.5	N/A	2005			DS-4WD	N/A	N/A	Required	N/A	N/A	N/A	P	N/A
Bulldog (Peter Ck)	BU 9	Spur 1 (BUR-17)	BCTS	T	0.5	N/A	2005		2007	DS-ATV	N/A	N/A	Required	N/A	N/A	N/A	P	N/A
Robson Ridge	RR06	Spur 1	BCTS	P	1	N/A	2005			DS-4WD	N/A	Required	Required	Required	Required	N/A	P	N/A
Big Sheep (Santa Rosa)	BS 19	Spur 1 (BSR-15)	BCTS	T	0.40	N/A	2005		2007	DP-XWD	N/A	N/A	Required	N/A	N/A	N/A	P	N/A
Big Sheep (Santa Rosa)	BS 18+ A62692-1	Br 1 (BSR-16)	BCTS	P	2.0	N/A	2005			DP-XWD	N/A	N/A	Required	N/A	N/A	N/A	P	N/A
Big Sheep	BS 16	Spur 1 (BSR-17)	BCTS	T	1.50	N/A	2005		2007	DS-ATV	N/A	N/A	Required	N/A	N/A	N/A	P	N/A
Big Sheep	BS 17	FSR Mainline	BCTS	P	N5-006	Deactivated	2005			DS-4WD	1-Bridge at Esling Creek	N/A	N/A	N/A	N/A	N/A	P	N/A
Big Sheep	BS 17	Spur 1 (BSR-18)	BCTS	T	0.60	N/A	2005		2007	DS-ATV	N/A	N/A	Required	N/A	N/A	N/A	P	N/A

Old and Mature Calculations using Fretwell Tables (2003)

The calculations shown below are to be viewed in context of the Recrutiment Strategy for LU 504

The calculations shown below are to be viewed in context of the requested use of KBLUP HLPO Variance #06

LU: N501

BEC: ICHdw

Table 1: Within Connectivity Corridor

BEC class		old	mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	0.0	0.0	370					
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0					
Sub-Total	0.0	0.0	0.0	370.0					
Proposed Development (Amendment #11)	0.0	0.0	0.0	23.1					
Remaining Area	**0.0**	**0.0**	**0.0**	**346.9**					

Table 2: Outside Connectivity Corridor

BEC class		old	mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	0.0	0.0	650					
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0					
Sub-Total	0.0	0.0	0.0	650.0					
Proposed Development (Amendment #11)	0.0	0.0	0.0	6.9					
Remaining Area	**0.0**	**0.0**	**0.0**	**643.1**					

* The proposed development does not create a deficit in mature or old area.

LU: N504

The calculations shown below are to be viewed in context of the Recrutiment Strategy developed Feb 8, 2005 by George Edney and Stu Clow for LU 504. Document is attached in this appendix and serves to guide development

LU: N504

BEC: ICHdw

Table 1: Within Connectivity Corridor

BEC class		old	mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	0.0	2.0	403.0	**500**				
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0	0.0				
Sub-Total	0.0	0.0	2.0	403.0	0.0				
Proposed Development (Amendment #11)	0.0	25.5	0.0	1.9					
Remaining Area	**0.0**	**-25.5**	**2.0**	**401.1**	**500**				

Table 2: Outside Connectivity Corridor

BEC class		old	mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	0.0	118.0	188.0					
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0					
Sub-Total	0.0	0.0	118.0	188.0					

Proposed Development (Amendment #11)	0.0	0.0	0.0	0.0					
Remaining Area	**0.0**	**0.0**	**118.0**	**188.0**					
Younger Age Class Recruitment Area Accounting			-25.5						
Remaining Area	**0.0**	**0.0**	**92.5**	**188.0**					

* The proposed development creates a 25.5ha deficit in old (age class 8) area within a connectivity corridor. Area is available, outside the connectivity corridor, for recruitment in age class 7.

LU: N504
BEC: ICHxw

Table 1: Within Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	0.0	8.0	175.0	300				
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0	0.0				
Sub-Total	0.0	0.0	8.0	175.0	0.0				
Proposed Development (Amendment #11)	0.0	0.0	0.0	36.3	0.0				
Remaining Area	**0.0**	**0.0**	**8.0**	**138.7**	**300**				

Table 2: Outside Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	0.0	20.0	0.0					
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0					
Sub-Total	0.0	0.0	20.0	0.0					
Proposed Development (Amendment #11)	0.0	0.0	0.0	0.0					
Remaining Area	**0.0**	**0.0**	**20.0**	**0.0**					

* The proposed development does not create a deficit in mature or old area.

LU: N504
BEC: ICHmw2

Table 1: Within Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	0.0	87.0	50.0	**140**				
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0	0.0				
Sub-Total	0.0	0.0	87.0	50.0	0.0				
Proposed Development (Amendment #11)	0.0	7.5	0.0	0.0	0.0				
Remaining Area	**0.0**	**-7.5**	**87.0**	**50.0**	**140**				

Table 2: Outside Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	122.0	274.0	128.0					
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0					
Sub-Total	0.0	122.0	274.0	128.0					
Proposed Development (Amendment #11)	0.0	0.0	0.0	0.0					
Remaining Area	**0.0**	**122.0**	**274.0**	**128.0**					
Younger Age Class Recruitment Area Accounting		-7.5							

Remaining Area	**0.0**	**114.5**	**274.0**	**128.0**					

* The proposed development creates a 7.5ha deficit in mature (age class 8) area within a connectivity corridor. Area is available, outside the connectivity corridor, for recruitment in age class 8.

LU: N505
BEC: ICHmw2

Table 1: Within Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 5b, 2003)	0.0	69.0	203.0	256.0					
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0					
Sub-Total	0.0	69.0	203.0	256.0					
Proposed Development (Amendment #11)	0.0	0.0	0.0	37.0					
Remaining Area	**0.0**	**69.0**	**203.0**	**219.0**					

Table 2: Outside Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 5b, 2003)	0.0	491.0	554.0	909.0					
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0					
Sub-Total	0.0	491.0	554.0	909.0					
Proposed Development (Amendment #11)	0.0	0.0	0.0	0.0					
Remaining Area	**0.0**	**491.0**	**554.0**	**909.0**					

* The proposed development does not create a deficit in mature or old area.

LU: N505
BEC: ESSFwc1

Table 1: Within Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 5b, 2003)	0.0	0.0	106.0	129.0					
Recent Development (Amendment #9)	0.0	59.5	0.0	59.5					
Sub-Total	0.0	-59.5	106.0	69.5					
Proposed Development (Amendment #11)	0.0	2.3	0.0	0.0					
Remaining Area	**0.0**	-61.8	**106.0**	**69.5**					

Table 2: Outside Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 5b, 2003)	0.0	512.0	335.0	343.0					
Recent Development (Amendment #9)	0.0	59.5	0.0	59.5					
Sub-Total	0.0	452.5	335.0	283.5					
Proposed Development (Amendment #11)	0.0	8.8	0.0	0.0					
Remaining Area	**0.0**	**443.7**	**335.0**	**283.5**					
Younger Age Class Recruitment Area Accounting		-61.8							

Remaining Area	0.0	381.9	335.0	283.5					

* The proposed development creates a 61.8ha deficit in mature (age class 8) area within a connectivity corridor.
Area is available, outside the connectivity corridor, for recruitment in age class 8.
Proposed Development will not harvest the 2.3 ha inside connectivity. Site Plan will reserve this type from harvest

LU: N505
BEC: ESSFwc4

Table 1: Within Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 5b, 2003)	0.0	356.0	185.0	148.0					
Recent Development (Amendment #9)	0.0	59.5	0.0	59.5					
Sub-Total	0.0	296.5	185.0	88.5					
Proposed Development (Amendment #11)	0.0	19.5	0.0	0.0					
Remaining Area	**0.0**	**277.0**	**185.0**	**88.5**					

Table 2: Outside Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 5b, 2003)	0.0	395.0	308.0	275.0					
Recent Development (Amendment #9)	0.0	59.5	0.0	59.5					
Sub-Total	0.0	335.5	308.0	215.5					
Proposed Development (Amendment #11)	0.0	23.9	0.0	26.0					
Remaining Area	**0.0**	**311.6**	**308.0**	**189.5**					

* The proposed development does not create a deficit in mature or old area.

LU: N508
BEC: ICHmw2

Table 1: Within Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	0.0	0.0	0.0					
Recent Development (Amendment #9)	0.0	39.1	0.0	0.0					
Sub-Total	0.0	-39.1	0.0	0.0					
Proposed Development (Amendment #11)	0.0	0.0	0.0	0.0					
Remaining Area	**0.0**	**-39.1**	**0.0**	**0.0**					

Table 2: Outside Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	121.0	204.0	150.0					
Recent Development (Amendment #9)	0.0	39.1	0.0	0.0					
Sub-Total	0.0	81.9	204.0	150.0					
Proposed Development (Amendment #11)	0.0	0.0	80.0	1.9					
Remaining Area	**0.0**	**81.9**	**124.0**	**148.1**					

Younger Age Class Recruitment Area Accounting		-39.1							
Remaining Area	**0.0**	**42.8**	**124.0**	**148.1**					

* The recent development creates a 39.1ha deficit in mature (age class 8) area within a connectivity corridor. Area is available, outside the connectivity corridor, for recruitment in age class 8.

LU: N508
BEC: ICHdw

Table 1: Within Connectivity Corridor

BEC class		old	mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	0.0	0.0	0.0					
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0					
Sub-Total	0.0	0.0	0.0	0.0					
Proposed Development (Amendment #11)	0.0	0.0	0.0	0.0					
Remaining Area	**0.0**	**0.0**	**0.0**	**0.0**					

Table 2: Outside Connectivity Corridor

BEC class		old	mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	0.0	0.0	122.0					
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0					
Sub-Total	0.0	0.0	0.0	122.0					
Proposed Development (Amendment #11)	0.0	0.0	19.8	26.0					
Remaining Area	**0.0**	**0.0**	**-19.8**	**96.0**					
Younger Age Class Recruitment Area Accounting				-19.8					
Remaining Area	**0.0**	**0.0**	**0.0**	**76.2**					

* The recent development creates a 19.8ha deficit in mature (age class 7) area outside a connectivity corridor.
Area is available, outside the connectivity corridor, for recruitment in age class 6.

LU: N508
BEC: ESSFwc1

Table 1: Within Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	0.0	0.0	0.0					
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0					
Sub-Total	0.0	0.0	0.0	0.0					
Proposed Development (Amendment #11)	0.0	0.0	0.0	0.0					
Remaining Area	**0.0**	**0.0**	**0.0**	**0.0**					

Table 2: Outside Connectivity Corridor

BEC class	old		mature						
Age class	9	8	7	6	5	4	3	2	1
Available Area (Table 2b, 2003)	0.0	94.0	93.0	35.0					
Recent Development (Amendment #9)	0.0	0.0	0.0	0.0					
Sub-Total	0.0	94.0	93.0	35.0					

Proposed Development (Amendment #11)	0.0	0.0	28.3	0.0					
Remaining Area	**0.0**	**94.0**	**64.7**	**35.0**					

* The proposed development does not create a deficit in mature or old area.

Map sheet	TSL(CP)	Blocks/ Road	Act, Reg. Or HLP Reference	Variance	Rationale for requesting a Variance
Forest Health/GreenUp / Patch Size					
Ymir	-	YM-12,13	FPC - OPR Part 3 Sec. 11(3)(b)(i) (A)	Cutblock size > 40ha/adjacency	The blocks proposed for harvest are greater than 40 ha individually or with adjacent areas. A patch size analysis has not been completed because harvesting is proposed for the control and salvage of bark beetle. Beetle populations have been identified in the proposed development area. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural Characteristics of the proposed blocks stand level retention will be achieved through the use of the following: retain non-pine species; utillize WTPs; design temporary reserves where possible, and implement other reserves (ie: rmzs, single trees) where available and operationally possible.
N.Whatshan	-	NW-11	FPC - OPR Part 3 Sec. 11(3)(b)(i) (A)	Cutblock size > 40ha/adjacency	The blocks proposed for harvest are greater than 40 ha individually or with adjacent areas. A patch size analysis has not been completed because harvesting is proposed for the control and salvage of bark beetle. Beetle populations have been identified in the proposed development area. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural Characteristics of the proposed blocks stand level retention will be achieved through the use of the following: retain non-pine species; utillize WTPs; design temporary reserves where possible, and implement other reserves (ie: rmzs, single trees) where available and operationally possible.
S.Whatshan	A75965	-	FPC - OPR Part 3 Sec. 11(3)(b)(i) (A)	Cutblock size > 40ha/adjacency	The blocks proposed for harvest are greater than 40 ha individually or with adjacent areas. A patch size analysis has not been completed because harvesting is proposed for the control and salvage of bark beetle. Beetle populations have been identified in the proposed development area. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural Characteristics of the proposed blocks stand level retention will be achieved through the use of the following: retain non-pine species; utillize WTPs; design temporary reserves where possible, and implement other reserves (ie: rmzs, single trees) where available and operationally possible.
Eagle	A70241, A75259	all blocks	FPC - OPR Part 3 Sec. 11(3)(b)(i) (A)	Cutblock size > 40ha/adjacency	The blocks proposed for harvest are greater than 40 ha individually or with adjacent areas. A patch size analysis has not been completed because harvesting is proposed for the control and salvage of bark beetle. Beetle populations have been identified in the proposed development area. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural Characteristics of the proposed blocks stand level retention will be achieved through the use of the following: retain non-pine species; utillize WTPs; design temporary reserves where possible, and implement other reserves (ie: rmzs, single trees) where available and operationally possible.
Eagle	-	EC-16	FPC - OPR Part 3 Sec. 11(3)(b)(i) (A)	Cutblock size > 40ha/adjacency	The blocks proposed for harvest are greater than 40 ha individually or with adjacent areas. A patch size analysis has not been completed because harvesting is proposed for the control and salvage of bark beetle. Beetle populations have been identified in the proposed development area. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural Characteristics of the proposed blocks stand level retention will be achieved through the use of the following: retain non-pine species; utillize WTPs; design temporary reserves where possible, and implement other reserves (ie: rmzs, single trees) where available and operationally possible.

Map sheet	TSL(CP)	Blocks/ Road	Act, Reg. Or HLP Reference	Variance	Rationale for requesting a Variance
Robson Ridge	-	RR-6,7,8	FPC - OPR Part 3 Sec. 11(3)(b)(i) (A)	Cutblock size > 40ha/adjacency	The blocks proposed for harvest are greater than 40 ha individually or with adjacent areas. A patch size analysis has not been completed because harvesting is proposed for the control and salvage of bark beetle. Beetle populations have been identified in the proposed development area. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural Characteristics of the proposed blocks stand level retention will be achieved through the use of the following: retain non-pine species; utillize WTPs; design temporary reserves where possible, and implement other reserves (ie: rmzs, single trees) where available and operationally possible.
College	-	CC-6,7,8	FPC - OPR Part 3 Sec. 11(3)(b)(i) (A)	Cutblock size > 40ha/adjacency	The blocks proposed for harvest are greater than 40 ha individually or with adjacent areas. A patch size analysis has not been completed because harvesting is proposed for the control and salvage of bark beetle. Beetle populations have been identified in the proposed development area. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural Characteristics of the proposed blocks stand level retention will be achieved through the use of the following: retain non-pine species; utillize WTPs; design temporary reserves where possible, and implement other reserves (ie: rmzs, single trees) where available and operationally possible.
Limpid	-	LI-5,6,8,9,11,13	FPC - OPR Part 3 Sec. 11(3)(b)(i) (A)	Cutblock size > 40ha/adjacency	The blocks proposed for harvest are greater than 40 ha individually or with adjacent areas. A patch size analysis has not been completed because harvesting is proposed for the control and salvage of bark beetle. Beetle populations have been identified in the proposed development area. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural Characteristics of the proposed blocks stand level retention will be achieved through the use of the following: retain non-pine species; utillize WTPs; design temporary reserves where possible, and implement other reserves (ie: rmzs, single trees) where available and operationally possible. For Block LI-11: this 40 ha proposed block will include harvesting of a WTP originally assigned to TSL A54526 due to forest health conditions (Fir Engraver Beetle) Additional replacement WTPS will be proposed through a Site Plan Amendment prior to sale. Change total harvest area to 45 ha in the harvest table to reflect this plan. For Block LI_08: Harvesting in this area is proposed to address the Forest Health situation and to improve the silviculture environment due to past logging practises.
BullDog	A72329	1	FPC - OPR Part 3 Sec. 11(3)(b)(i) (A)	Cutblock size > 40ha/adjacency	The blocks proposed for harvest are greater than 40 ha individually or with adjacent areas. A patch size analysis has not been completed because harvesting is proposed for the control and salvage of bark beetle. Beetle populations have been identified in the proposed development area. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural Characteristics of the proposed blocks stand level retention will be achieved through the use of the following: retain non-pine species; utillize WTPs; design temporary reserves where possible, and implement other reserves (ie: rmzs, single trees) where available and operationally possible.

Map sheet	TSL(CP)	Blocks/ Road	Act, Reg. Or HLP Reference	Variance	Rationale for requesting a Variance
BullDog	-	BU-9,10,11	FPC - OPR Part 3 Sec. 11(3)(b)(i) (A)	Cutblock size > 40ha/adjacency	The blocks proposed for harvest are greater than 40 ha individually or with adjacent areas. A patch size analysis has not been completed because harvesting is proposed for the control and salvage of bark beetle. Beetle populations have been identified in the proposed development area. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural Characteristics of the proposed blocks stand level retention will be achieved through the use of the following: retain non-pine species; utillize WTPs; design temporary reserves where possible, and implement other reserves (ie: rmzs, single trees) where available and operationally possible.
Big Sheep Creek	-	BS-16,17,19	FPC - OPR Part 3 Sec. 11(3)(b)(i) (A)	Cutblock size > 40ha/adjacency	The blocks proposed for harvest are greater than 40 ha individually or with adjacent areas. A patch size analysis has not been completed because harvesting is proposed for the control and salvage of bark beetle. Beetle populations have been identified in the proposed development area. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural Characteristics of the proposed blocks stand level retention will be achieved through the use of the following: retain non-pine species; utillize WTPs; design temporary reserves where possible, and implement other reserves (ie: rmzs, single trees) where available and operationally possible.

Appendix O
Forest Health Rationale Table

Map Ref. No. (BCGS)	Geographic Location	TSL-Blk or Map ID and Unit	Gross Area (0.1ha)	Vol m3/ha (All Species)	Vol m3 (Pl>12.5cm)	LU	Timber Type	Age	Bark Beetle	Infest. Level %	Green to Red ratio	Survey Type	Survey Date	Suscept and Risk Rating	Other Forest Health Factors	Treatment Schedule	Rationale	Source of Rationale
82E010	Big Sheep	BS-19*	17	3300	Not Available at this time	N801	Bl(SeFdLw)	81	IBM	Not Available at this time	Not Available at this time	2004 Measle Mapping Overview	Fall 2004	Moderate to Severe	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight.	2004 Measel mapping indicates areas of infestation and single tree attack. Susceptible Pl types observed. Prompt forest management is required to address the developing IBM infestation in this susceptible type	Review of 2004 Measle Map results - C Nixon, may 31, 2005
82F001	Santa Rosa	A 62882-1*	42.1	6125	Not Available at this time	N501	Lw(PlFd)	61	IBM	Not Available at this time	Not Available at this time	2004 Measle Mapping Overview	Fall 2004	Moderate to Severe	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight.	2004 Measel mapping indicates areas of infestation and single tree attack. Susceptible Pl types observed. Prompt forest management is required to address the developing IBM infestation in this susceptible type	Review of 2004 Measle Map results - C Nixon, may 31, 2005
82F001	Big Sheep	BS-18*	30	6800	Not Available at this time	N801	Pl(LwFd)	101	IBM	Not Available at this time	Not Available at this time	2004 Measle Mapping Overview	Fall 2004	Moderate to Severe	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight.	2004 Measel mapping indicates areas of infestation and single tree attack. Susceptible Pl types observed. Prompt forest management is required to address the developing IBM infestation in this susceptible type	Review of 2004 Measle Map results - C Nixon, may 31, 2005
82F001	Big Sheep	BS-16	98	13800	Not Available at this time	N501	Pl(LwFd)	81	IBD	Fir Engraver Beetle Noted on Field Recce	Not Available at this time	2004 Measle Mapping Overview Walkthrough	38322	Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight.	Partial Cut block is planned to salvage timber values in Fir Engraver Beetle and Mountain Pine Beetle infested timber. 2004 Measel mapping indicates dead or dying trees over approximately 1/3 of the polygon area. A 2004 forest health overview flight confirms the outbreak. A follow up forest health survey conducted in December 2004 indicates active Fir Engraver through-out. Although low populations were observed, the survey indicated potential of spread as moderate. Mountain Pine Beetle was not observed along the survey lines, however, small patches of susceptible Pl and evidence of old beetle activity was observed	file note, January 10, 2005 from Russ Holitzki
82F011	Big Sheep	BS-17	75	17250	Not Available at this time	N501	Fd(Se)	81	IBM	Fir Engraver Beetle Noted on Field Recce	Not Available at this time	2004 Measle Mapping Overview Walkthrough	38626	Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight.	IBM Hazard mapping indicates that this unit is rated high based on stand attributes. Consequently, the south half of this unit was ground surveyed in October of 2004. IBM infestation at this point is endemic, however, Pl comp and beetle population expected to be higher in the north half of the block. Ground recce on north half of unit scheduled for 2005	file note, January 10, 2005 from Russ Holitzki
82F011	Big Sheep	BS-4	144	8000	Not Available at this time	N501	LwFdx(PlAt)	61	IBM	Not Available at this time	Not Available at this time	Not Available at this time	Not Available at this time	Not Available at this time	Not Available at this time	Not Required	PREVIOUSLY APPROVED- AREA REDUCTION ONLY. AREA REDUCTION IS TRANSFERRED TO BLOCK BS-17	
82F021	Robson Ridge	RR-6	26	3800	Not Available at this time	N508	Fd(PlEp)	101	IBM	Not Available at this time	Not Available at this time	2004 Measle Mapping Overview Walkthrough	Fall 2004	Moderate to High	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight.	High to Moderate susceptible type as identified in the Sattva Pine Priority Report of March 2005. 2004 Measle Maps will confirm presence of infection centres	Review of 2004 Measle Map results, Sattva Priority Report, personal communications with Field Team - C Nixon, may 31, 2005
82F021	Robson Ridge	RR-7	2	400	Not Available at this time	N508	Pl(Lw)	101	IBM	Not Available at this time	Not Available at this time	2004 Measle Mapping Overview Walkthrough	Fall 2004	High	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight.	High susceptible type as identified in the Sattva Pine Priority Report of March 2005. 2004 Measle Maps will confirm presence of infection centres. This unit will focus on pine removal, a site plan amendment will be required to amend this area out of the previous SP area	Review of 2004 Measle Map results, Sattva Priority Report, personal communications with Field Team - C Nixon, may 31, 2005
82F021/82F031	Robson Ridge	RR-8	41.7	6800	Not Available at this time	N509	Hw(PwSe)	81	IBM	Not Available at this time	Not Available at this time	2004 Measle Mapping Overview Walkthrough	Fall 2004	Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight.	Moderate susceptible type as identified in the Sattva Pine Priority Report of March 2005. 2004 Measle Maps will confirm presence of infection centres. This unit will focus on pine removal, with non-pine stems retained as operationally feasible	Review of 2004 Measle Map results, Sattva Priority Report, personal communications with Field Team - C Nixon, may 31, 2005
82F003	Limpid	LI-05	53	13250	Not Available at this time	N504	Pl(Lw)	81	IBM	Estimate	2 to 3:1	Walkthrough	38343	Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight.	Moderate susceptible type as identified in the Sattva Pine Priority Report of March 2005. Field walkthrough conducted by Mike Ferguson on Dec 22, 2004 confirms incidence of IBM attack	E-mail notes and summaries provided by Mike Ferguson December 22, 2005
82F003	Limpid	LI-06	47	11750	Not Available at this time	N504	PlLw	41	IBM	Estimate	0.0840278	Walkthrough	38343	Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight.	Moderate susceptible type as identified in the Sattva Pine Priority Report of March 2005. Field walkthrough conducted by Mike Ferguson on Dec 22, 2004 confirms incidence of IBM attack	E-mail notes and summaries provided by Mike Ferguson December 22, 2005

Map Ref. No. (BCGS)	Geographic Location	TSL-Blk or Map ID and Unit	Gross Area (0.1ha)	Vol m3/ha (All Species)	Vol m3 (Pl>12.5cm)	LU	Timber Type	Age	Bark Beetle	Infest. Level %	Green to Red ratio	Survey Type	Survey Date	Suspect and Risk Rating	Other Forest Health Factors	Treatment Schedule	Rationale	Source of Rationale
82F003	Limpid	LI-7	38.3	10500	Not Available at this time	N504	FdBg(PlC w/Hw)	101	IBM	Estimate	Not Available at this time	2004 Measle Mapping Overview Walkthrough	Fall 2004	Not Available at this time	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvestin does not occur prior to the Spring 2006 flight.	Attack levels range from 40-60% (green, red, gray) in the Grand Fir and Douglas Fir. Beetle is Fir Engraver Beetle, and Douglas Fir Beetle. Prompt forest management action is required to address this infestation.	email from Mike Ferguson, June 1, 2005
82F004	Limpid	LI-8	50.4	10500	Not Available at this time	N504	FdBg(LwAt)	81	IBM	Estimate	Not Available at this time	Walkthrough	Fall 2004	Not Available at this time	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvestin does not occur prior to the Spring 2006 flight.	Ground recci work completed by implementation contractor indicated 30-50% of the timber is red or gray attack in Fir Engraver Beetle. Prompt forest management activities are required to capture losses o timber value and minimize damage to non-timber resources. BCTS i working with WLAP representative to develop some specific stand lev criteria in the Limpid Creek area.	email from Mike Ferguson, June 1, 2005. In addition to the Forest Health rationale, BCTS has also approached the management of the unit to improve the silvicultural environment in consideration of past harvesting
82F004	Limpid	LI-9	48	13500	Not Available at this time	N504	Fdi(Lw)	81	IBD	Estimate	Not Available at this time	Walkthrough	38322	High	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvestin does not occur prior to the Spring 2006 flight.	Nearly the entire area of this block is covered by a 2004 measel polygon identifying beetle activity. Ground crews have confirmed act engraver beetle activity through-out.	file note, January 10, 2005 from Russ Holdzki. In addition to the Fore Health rationale, BCTS has also approached the management of the unit to improve the silvicultural environment in consideration of past harvesting
82F004	Limpid	LI-10	33	8700	Not Available at this time	N504	Fdi(LwPlC w/Hw)	141	IBM	Estimate	Not Available at this time	Walkthrough	Fall 2004	Not Available at this time	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvestin does not occur prior to the Spring 2006 flight.	Ground recci work completed by implementation contractor indicated 20-30% of the timber is red or grey attack in Fir Engraver Beetle. Prompt forest management activities are required to capture losses o timber value and minimize damage to non-timber resources. BCTS i working with WLAP representative to develop some specific stand lev criteria in the Limpid Creek area.	email from Mike Ferguson, June 1, 2005
82F004	Limpid	LI-11	40	10000	Not Available at this time	N504	Fdi(LwAt)	81	IBM	Estimate	Not Available at this time	Walkthrough	Fall 2004	Not Available at this time	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvestin does not occur prior to the Spring 2006 flight.	Ground recci work completed by implementation contractor indicated 30-80% of the timber is red or grey attack in IBI and IBD Beetle. Of th remaining Grand Fir- 40-60% green attack levels. DRA is also suspected. Extensive standing dead timber. Major Salvage operation Prompt forest management activities are required to capture losses o timber value and minimize damage to non-timber resources. BCTS i working with WLAP representative to develop some specific stand lev criteria in the Limpid Creek area.	email from Mike Ferguson, June 1, 2005
82F003	Limpid	LI-12	12	3800	Not Available at this time	N504	Pli(FdiBgLw)	81	IBM	Not Available at this time	Not Available at this time	2004 Measle Mapping Overview Walkthrough	Fall 2004	Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvestin does not occur prior to the Spring 2006 flight.	Overview assessment indicates moderate susceptible pine type. BCTS plans to monitor IBM and IBD in this block and address as the infection enters the area. Pine type is highly susceptible to potential infestation.	email from Mike Ferguson, June 1, 2005
82F004	Limpid	LI-13	47	14100	Not Available at this time	N504	Pli(Lw)	81	IBD IBM	Not Available at this time	Not Available at this time	2004 Measle Mapping Overview Walkthrough	Fall 2004 Spring 2005	Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvestin does not occur prior to the Spring 2006 flight.	Green and Red attack by Fir Engraver Beetle and Douglas Fir Beetle throughout unit.	email from Mike Ferguson, June 1, 2005
82F022	College	CC-6	133	13300	Not Available at this time	N508	LwPli(Fdi)	81	IBM	Not Available at this time	Not Available at this time	Walkthrough, Overview	Jan 2005, Fall 2004	Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvestin does not occur prior to the Spring 2006 flight.	2004 Overview Measel mapping indicates infection centres in this moderate risk to IBM area. Conducted walk-through of unit in Januar 2005 - beetle active but low population, however, susceptible Pl types observed. Prescription will likey comprise pine removal only, and other species as operationally necessary. BCTS may consider patch cutting in this area.	email - Greg Belyea, January 10, 2005, plus review of 2004 measle maps by C.Nixon on May 31, 2005
82F022	College	CC-7	96	17200	Not Available at this time	N508	LwPli(Fdi)	121	IBM	Not Available at this time	Not Available at this time	2004 Measle Mapping Overview Walkthrough	Fall 2004	High to Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvestin does not occur prior to the Spring 2006 flight.	2004 Overview Measel mapping indicates infection centres in this high to moderate risk to IBM area. Walk-through of unit is planned in the spring of 2005. Based on past history of this area- this type will have t be addressed in a timely manner to minimize loss of timber values and damage to associated non-timber resources. Development of this unit will be subject to the community watershed section of Am #11. Prescription will likey comprise pine removal only, and other species a operationally necessary.	file note, January 10, 2005 from Russ Holdzki
82F022	College	CC-8	32	4400	Not Available at this time	N508	FdiLw(Pli)	121	IBM	Not Available at this time	6 to 1	Walkthrough, Jan 2005	Fall 2004	Confirmed IBM	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvestin does not occur prior to the Spring 2006 flight.	Personal communication with Field Unit staff indicate that IBM is attacking the pine in this stand. Infestation levels were field confirmed in January of 2005. Development of this unit will be subject to the community watershed section of Am #11. Prescription will likey comprise pine removal only, and other species as operationally necessary.	personal communication with Field Staff, discussed at Round Table o May 20, 2005- CJ Nixon, May 31, 2005
82E040	Bulldog	BU-9	77	14600	Pine leading	N509	Lw(PlSeFdi)	61	IBM	Not Available	Not Available	2004 Measle Mapping Overview Walkthrough	Not Available	High to Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvestin does not occur prior to the Spring 2006 flight.	Leading Pl type, no walkthrough completed yet, considered a high to moderate risk for pine beetle infestation from the existing IBM hazard mapping (Polygon # 7). 2004 Measle Map indicates infection centers noted. Rx to focus on pine removal, retain non pine stems as much as operationally possible.	email, Greg Belyea, February 4, 2005

Map Ref. No (BCGS)	Geographic Location	TSL-Blk or Map ID and Unit#	Gross Area (0.1ha)	Vol m3/ha (All Species)	Vol m3 (Pi>12.5cm)	LU	Timber Type	Age	Bark Beetle	Initial Level %	Green to Red ratio	Survey Type	Survey Date	Suscept and Risk Rating	Other Forest Health Factors	Treatment Schedule	Rationale	Source of Rationale
82E040	Bulldog	BU-10	258	58025	Pine leading	N509	PlLw(Fd)	61	IBM	Not Available	Not Available	IBM Hazard Mapping	Not Available	High to Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight	The area within the block is mapped as having a moderate to high susceptibility to IBM based on stand attributes- Polyd 5. The 2004 measel mapping indicates infestation points (individual trees or patches of trees) throughout the area. No ground survey has been conducted to date	file note: January 10, 2005 from Russ Holitzki
82E040	Bulldog	BU-11	50	10350	Pine leading	N509	PlLw(Fd)	61	IBM	Not Available	Not Available	IBM Hazard Mapping	Not Available	High to Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight	Leading Pl type, no walkthrough completed yet, considered a high to moderate risk for pine beetle infestation from the existing IBM hazard mapping (Polygon # 7). 2004 Measle Map indicates infection centers noted. Rx to focus on pine removal, retain non pine stems as much as operationally possible	email: Greg Belyea, February 4, 2005
82E040	Bulldog	BU-12	33	5625	Pine leading	N509	Pl(Lw)	61	IBM	Not Available	Not Available	IBM Hazard Mapping	Not Available	High to Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight	Leading Pl type, no walkthrough completed yet, considered a high to moderate risk for pine beetle infestation from the existing IBM hazard mapping (Polygon # 7). 2004 Measle Map indicates infection centers noted. Rx to focus on pine removal, retain non pine stems as much as operationally possible	email: Greg Belyea, February 4, 2005
82E030/40	Bulldog	A72329	170	50000	not available at this time	N509	Pl(FdLw)	61	IBM	Estimate	1.7:1	Walkthrough	Oct. 2004	Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight	Nazca Survey dated October 2004 indicates G:R ratio of 1.7 to 1. Previous rationale for exceeding max cutblock size was partial cutting retaining 40% or more of the pre harvest basal area has now been revised under Am #11 to show clearcut with reserves to address beetle population expansion. Beetle probe survey done through some of the block area. Indicates a moderate level of pine beetle activity, moderate spread potential because of the mixed species component of the stand. Pine beetle infestation will continue to progress and threaten the pine component of this block. Harvest pine types and reserve other species as much as possible	email: Greg Belyea, February 4, 2005, e-mail note from R Holitzki, Apr 6, 2005
82L010	Whatshan North	NW11	100.0	20000	not available at this time	N520	Pl(FL)	61	IBM	not available at this time	not available at this time	Walkthrough	Oct-Nov 2004	High-field confirmed	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight	Clearcut silviculture system / cable harvest system. This block is going from information on the previous plan to approved and the sahpe has changes slightly from the last FDP. A significant amount of red attack was noted within this block during the forest health flight this year. Bill Hilton and I walked through this area in Oct/Nov 04 and noted a significant amount of MPB attack (green, red, grey) with in this and the surrounding stand. This blockis in eminent danger due to the MPB activity noted. In fact it might be too late to capture the value from a lot of this stand due to the difficult harvesting (cable ground) and the difficult access which reqires a significant road upgrade and construction over steep rocky ground. This area was surveyed as part of the Field Teams MPB survey project. Results are pending. Site Plan will reflect harvest in pine only, and other species taken for safety and as operationally required	email: Doug MacPherson, December 22, 2005 and May 27, 2005
82E100	Whatshan South	A75065	113.0	20000	not available at this time	N520	Pl(F(L)	61	IBM	not available at this time	not available at this time	Walkthrough	Oct-Nov 2004	High-field confirmed	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight	Block is 90% pine, High Risk beetle polygon. Green and Red attack noted on layout and cruise. Stand structural elements will be maintained through retention of other species as much as operationally possible. Pl harvest only / ground based harvest system / clearcut with reserves silviculture system. This block is new on the plan. This TSL has significant MPB attack that was noted during the development reviews by myself and Bill Hilton. Due to the species make-up of this block and the level of current beetle activity noted this block is in eminent danger	email: Doug MacPherson, December 22, 2005, May 27, 2005
82E100	Whatshan South	SW9	80.3	21600	not available at this time	N520	LPl(F)	61	IBM	not available at this time	not available at this time	not available at this time	not available at this time	not available at this time	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion will address any forest health issue	Upon finalized layout, this unit will be less than 40 hectares, so no forest health rationale is required	
82E100	Whatshan South	SW10/A75087	30.7	7000	not available at this time	N520	FL(E)	61	IBM	not available at this time	not available at this time	not available at this time	not available at this time	not available at this time	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion will address any forest health issue	This unit will be less than 40 hectares, no forest health rationale required	
82E089	Eagle Cr	A70241	83.0	23800	not available at this time	N519	Pl	61	IBM	not available at this time	not available at this time	Walkthrough-Overview Measle Mapping	Oct-Nov 2004	Moderate to Severe	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring 2006 flight	Pl harvest only, ground based harvest system, clearcut with reserves partial cut silviculture system. This block is going from information to approved and the shape has changed slightly from the last FDP. When this block was originally placed on the FDP as an information block in 2001, Riverside Forest Products had just completed a patch size analysis of this landscape unit and i indicated that there was a shortage of openings in the 40-80ha sizes which this block falls into. This patch size analysis and the high risk species make-up of this stand was the original rationale for this opening size. With the rising MPB in the area this stand is now high risk for increased attack. 2004 Measle Maps will indicate infection centres, so prompt forest management is required	email: Doug MacPherson, December 22, 2005

Map Ref. No. (BCGS)	Geographic Location	TSL-Blk or Map ID and Unit#	Gross Area (G.1ha)	Vol m3/ha (All Species)	Vol m3 (Pl>12.5cm)	LU	Timber Type	Age	Bark Beetle	Infest. Level %	Green to Red ratio	Survey Type	Survey Date	Suscept and Risk Rating	Other Forest Health Factors	Treatment Schedule	Rationale	Source of Rationale
82E079	Eagle Cr	A75290	419.0	101100	not available at this time	N519	Pli	61	IBM	not available at this time	not available at this time	Walkthrough-Overview Measle Mapping	Oct-Nov 2004	Moderate to Severe	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring, 2006 flight.	Pl harvest only, ground based harvest system, clearcut with reserves partial cut silviculture system. This is a new block on plan. This area has not had a beetle survey as part of this years work done by Russ. During the cruise check phases of development (july 4) significant green attack was noted by myself and Cliff Lauder. Of the plots and lines checked as part of the cruise check I would say that 30-50% of the larger diameter lodgepole pine stems were attacked. This area is adjacent to an area that shows significant red attack from the forest health flights and was probed by Russ as part of his Pl surve project. Due to the amount of green attack noted, the stands proximity to an area of significant red attack and the stand's species make-up being primarily Pl it is my opinion this block is in eminent danger due to the MPB population in the area and within the block. This block will use a silviculture system that utilizes clearcutting, and various levels of retention, with some areas retainning more than 40% basal area in reserves where operationally feasib	email: Doug MacPherson, December 22, and May 27, 2005
82E079	Eagle Cr	EC16	278.8	68300	not available at this time	N519	Pli	61	IBM	not available at this time	not available at this time	Walkthrough-Overview Measle Mapping	Oct-Nov 2004	Moderate	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring, 2006 flight.	Pl harvest only / ground based harvest system / clearcut with reserves silviculture system. This block is new on the plan. Field recce in 2004 showed that beetle is present in the stand. This block is directly adjacent to a large Pl, P and T block that has beetle in it. I have seen photo taken from a aircraft that show significant red attack in the are of the block. Block final layout will be significantly smaller than what is proposed on this plan due to terrain conditions and respecting the adjacent age class 8 type in regard to potential OGMA.	email: Doug MacPherson, December 22, May 27, 2005
82F025	Ymir	YM-12	63.1	15750	not available at this time	N505	Pli	101	IBM	not available at this time	2:1	Walkthrough	January 2005	High	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring, 2006 flight.	Nasca Survey conducted Oct 15 and Nov 8- 2004 indicated for polygons 217 and 220 G:R attack ratio of 2:1. Reserve other species as operationally feasible. In consideration of Caribou Habitat Assessment recommendations, this area requires expedited salvage recove[illegible]mber in eminent danger of being lost, damaged or destroyed due to beetle infestation. Stand is suffering from declining wood quality	Field Tech memo from Russ Holitzki - April 6, 2005 and Nasca Survey Results
82F025	Ymir	YM-13	54.5	13500	not available at this time	N505	Bl(Pl)	141	IBM	not available at this time	9:1	Walkthrough	January 2005	High	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring, 2006 flight.	Nasca Survey conducted Oct 15 and Nov 8- 2004 indicated for polygons 240 and 290 G:R attack ratio of 9:1. Reserve other species as operationally feasible. In consideration of Caribou Habitat Assessment recommendations, this area requires expedited salvage recover timber in eminent danger of being lost, damaged or destroyed due to beetle infestation. Stand is suffering from declining wood quality	Field Tech memo from Russ Holitzki - April 6, 2005 and Nasca Survey Results

Mountain Caribou Field Assessment Report

Blocks YM-11, YM-12 & YM-13
Oscar Creek

Prepared for
B.C. Timber Sales Program
Arrow-Boundary District

Prepared by:
Dennis Hamilton, RPBio.[1]
&
Doug Seaton[2]

May 23, 2005

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[1] Nanuq Consulting, Nelson, BC, V1L 3J3
[2] Cape Horn Consulting, Nakusp, BC V0E 2G0

BACKGROUND

BC Timber Sales proposes to harvest three cutblocks in the Oscar Creek drainage in the Arrow-Boundary Forest District (Figure 1). The proposed development area is within the ESSFwc4 and ICHmw2 biogeoclimatic subzones between roughly 1500 to 1900 meters in elevation. It is dominated by mature lodgepole pine, with minor components and understory of Engelmann spruce, subalpine fir, and, on drier sites, Douglas fir and western larch. Mountain pine beetle attack is evident throughout the area. Typical forest stand conditions and evidence of beetle attack are illustrated in Figure 2.

Portions of the proposed development area are within the known range of the endangered mountain caribou in the South Selkirks. Much of the remaining area has also been identified as *potential* mountain caribou recovery habitat under Recovery Action Plan for the South Kootenay Mountain Caribou (2004).

In May 2005, a reconnaissance helicopter flight and field-based caribou habitat assessments were completed to evaluate potential impacts of proposed forest developments on mountain caribou and their habitat.

METHODS

An overview helicopter flight[3] was completed on 11May05 to observe current use by caribou (animals or tracks) and provide a landscape context of caribou habitat in relation to proposed forest developments. Field surveys were then conducted to verify evidence of caribou use, conduct ground-based caribou habitat evaluations (RISC 1999) and record wildlife observations in the vicinity of proposed forest development. Field sampling procedures followed those described by Hamilton et al (2004). Arboreal lichen, key forage of mountain caribou, was estimated at sampling locations according to Armleder et al (1992). Field sampling results were recorded on standardized Wildlife Habitat Assessment (WHA) field forms (RIC 1998). The surveys were completed by experienced caribou biologist and technician.

---

[3] Dennis Hamilton (Nanuq Consulting), Doug Seaton (Cape Horn Consulting) and Jim Annunziello (BCTS)

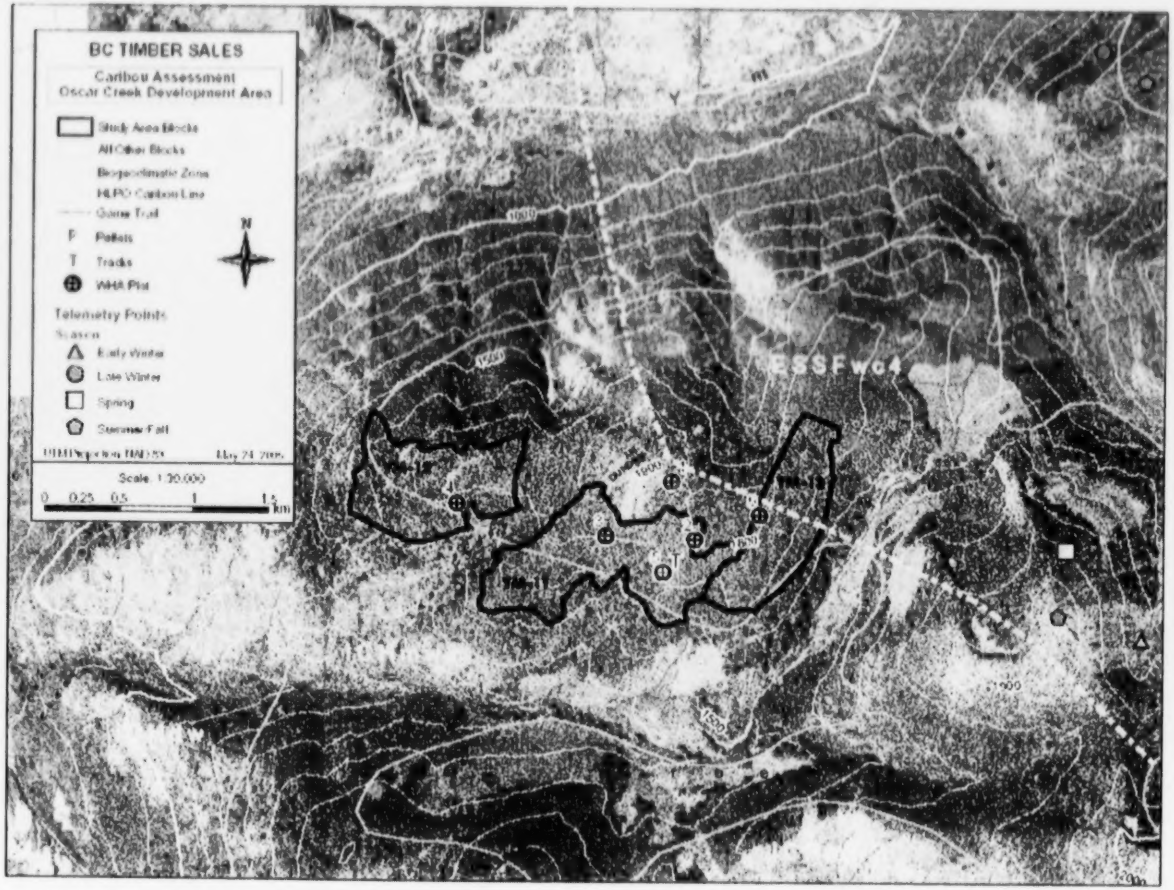
BC TIMBER SALES
Caribou Assessment
Oscar Creek Development Area
Study Area Blocks
All Other Blocks
Biogeoclimatic Zone
MLPO Caribou Line
Game Trail
P Pellets
T Tracks
WHA Plot
N
Telemetry Points
Season
Early Winter
Late Winter
Spring
Summer-Fall
Scale 1:20,000
0 0.25 0.5 1 1.5 km
ESSFwc4
1600
1500

Figure 1: Oscar Creek Proposed Development Area

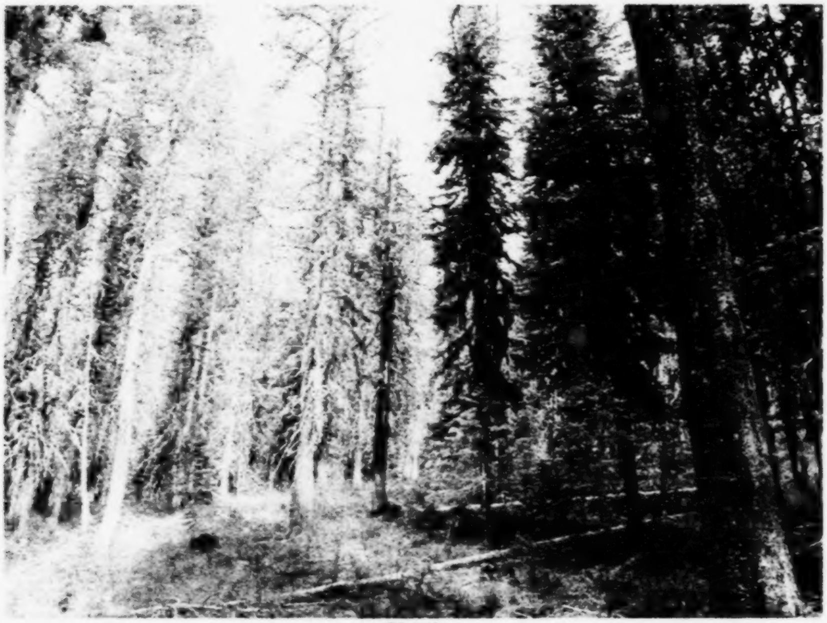
Plot 4

Figure 2: Representative Pl-dominated forest conditions found in the proposed Oscar Creek forest development area. Note how beetle attack is altering stand conditions.

RESULTS and DISCUSSION

Caribou telemetry locations, caribou observations, field sampling sites, and existing and proposed forest harvesting and forest roads are illustrated in Figure 1. Figure 3 provides a broader scale depiction of this information at the landscape level.

Telemetry monitoring from 1996 to 2003 did not identified use of the proposed Oscar Creek development area by collared caribou. No caribou tracks were observed from the air during the helicopter overview flight on 11May05; however, several sets of tracks were observed in the upper ESSF forested habitat < 5 km to the east of the development area (Figure 3).

One set of caribou tracks, belonging to an individual caribou, was identified during field survey of Block YM-11 (Plot 5). No other evidence of caribou use was observed during field surveys of Mt. Dundee or Blocks YM-12 and YM-13. Other wildlife observations included evidence of deer, elk and moose presence (tracks, excrement and antler scrapings on trees). A female Three-toed Woodpecker was also observed feeding on a beetle attacked lodgepole pine tree in the lower portion of Block YM-11.

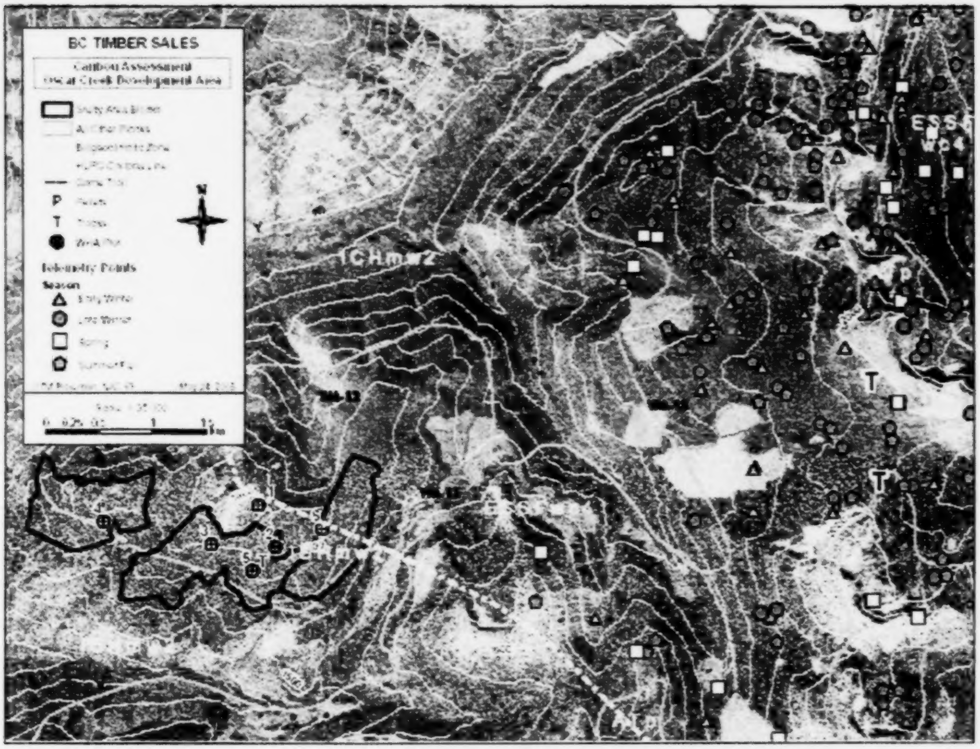
BC TIMBER SALES
Caribou Assessment
Creek Development Area
N
P
T
Telemetry Points
Season
Early Winter
Late Winter
Spring
0 0.25 0.5 1 1.5 km
ICHmw2
ESSF wc4

Figure 3: Caribou tracks to the east of proposed forest development - observed during helicopter reconnaissance flight

Field-based caribou habitat ratings for sample sites are presented in Table 1. Habitat ratings varied by season of use and location. A moderately high habitat rating (class 2) was assigned to 2 of 24 (8%) habitat sampling sites, whereas low to very low habitat ratings (classes 4 and 5) were assigned to 16 of 24 (64%) sites evaluated. Spring and summer forage was limited in much of the area surveyed, most probably due the predominance of bear-grass, poor quality forage except for perhaps bears in early spring.

Arboreal lichen (*Alectoria* and *Bryoria*) availability as winter forage was generally moderate to low in abundance (Figure 4); however, some evidence of higher lichen productivity was evident but such areas were limited in both abundance and distribution (Figure 5).

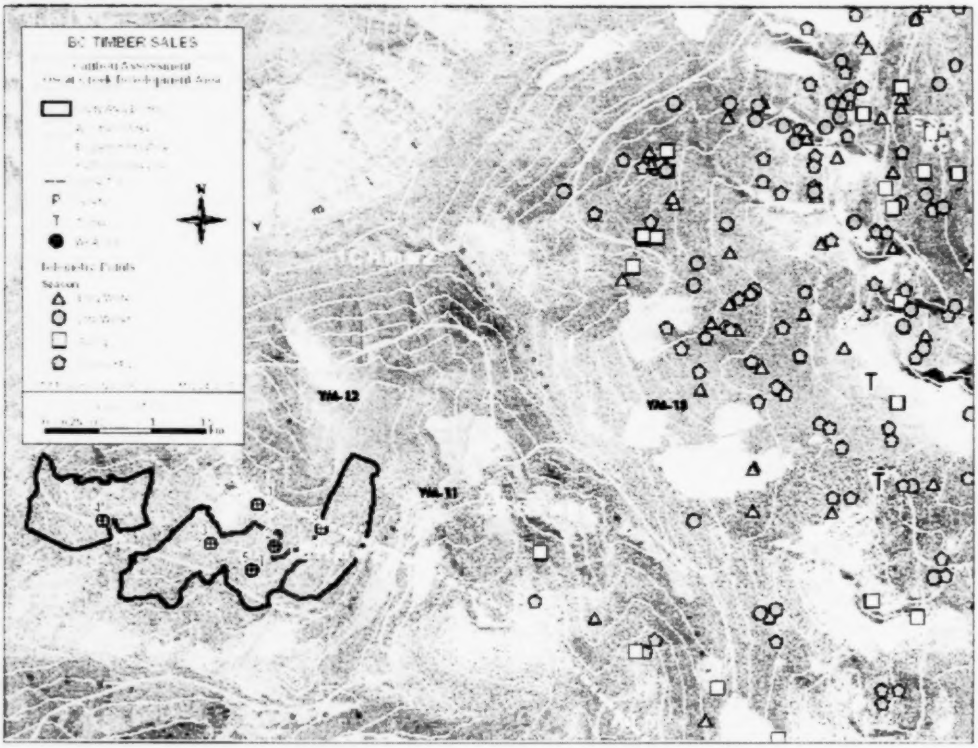

Figure 3: Caribou tracks to the east of proposed forest development - observed during helicopter reconnaissance flight

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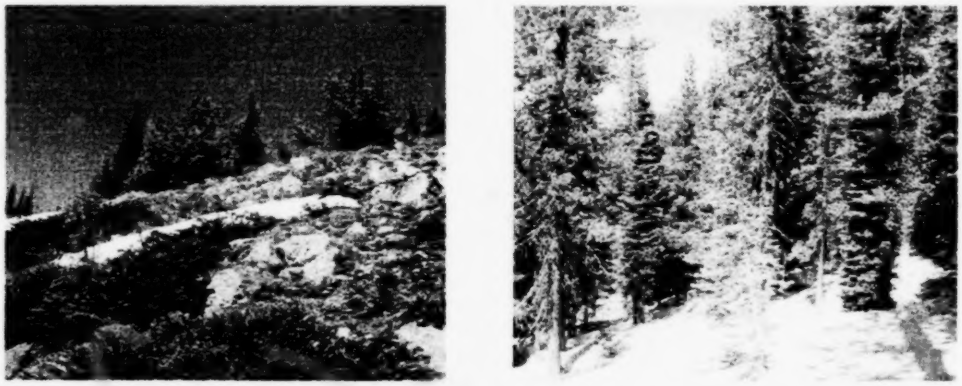
Arboreal lichen (*Alectoria* and *Bryoria*) availability as winter forage was generally moderate to low in abundance (Figure 4); however, some evidence of higher lichen productivity was evident but such areas were limited in both abundance and distribution (Figure 5).

Table 1: Summary of Field-based Habitat Ratings for Mountain Caribou in the Oscar Creek area of the South Selkirks

SEASON OF USE	FIELD-BASED HABITAT RATING CLASS*					
	Plot #1 (Mt Dundee)	Plot #2 (Bk YM-11)	Plot #3 (Bk YM-11)	Plot #4 (Bk YM-12)	Plot #5 (Bk YM-11)	Plot #6 (Bk YM-13)
Early winter	4	3	2	3	4	3
Late Winter	4	4	3	4	5	4
Spring	4	3	4	4	4	4
Summer/ Fall	3	2	5	4	4	4

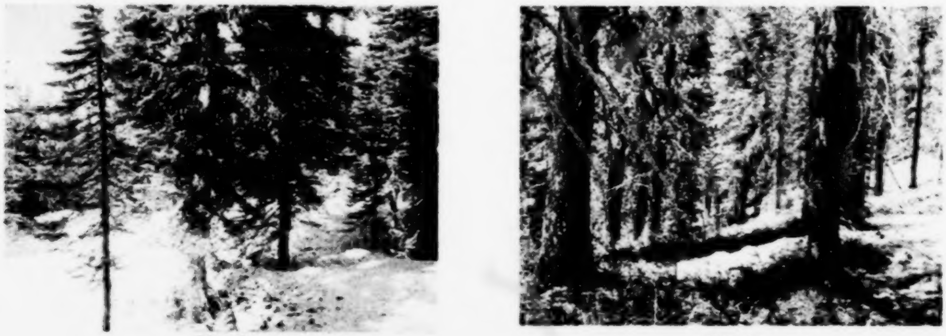
* *High*= Class 1; *Moderately High* = Class 2; *Moderate* = Class 3; *Low* = Class 4; *Very Low* = Class 5; and, *Nil* = Class 6.



Area between Mount Dundee and Block YM-11

Plot 2

Figure 4: Areas of lower arboreal forage lichen abundance



Plot 3

Plot 5

Figure 5: Higher stand components of Balsam and Spruce supported arboreal forage lichen. Such habitats were not abundant in the proposed development area, which was mostly a Pl-leading forest (Figure 2)

At the landscape level, Mt. Dundee and much of Oscar Creek is separated spatially from known caribou habitat to the east by the extent of existing forest harvesting and, in the absence of ridgeline connectivity, the need for animals to migrate through roaded valleys. The anticipated loss of forest habitat to beetle infestation can be expected to reduce overall caribou habitat suitability, regardless of salvage activities.

RECOMMENDATIONS

All of the Oscar Creek proposed forest development area is either within habitat identified to be managed for mountain caribou under the Kootenay-Boundary HLPO or is under consideration as potential habitat needed for planning recovery of mountain caribou in the South Selkirks. Of immediate management concern is the mountain pine beetle problem in this area. In consideration of this and based on field review results, the following is recommended:

- Forest harvesting be limited to Pl salvage
- All other mature and residual conifer species be retained during salvage activities, to the extent practicable
- Mixed forest regeneration and lower stocking levels that allow for development of stand characteristics conducive to recovery of arboreal lichen forest conditions be supported, as needed to meet caribou recovery planning

References Cited

Armleder, H.M., S. Stevenson, and S.D. Walker. 1992. Estimating the Abundance of Arboreal Forage Lichens. Land Management Handbook Field Guide Insert 7. Ministry of Forests, Research Program, Victoria, BC.

Hamilton, D., D. Seaton and C. Leitch. 2004. TFL23 Mountain Caribou Landscape Unit Planning Field Assessment and Reporting Procedures Version 3.0. Prepared for Pope & Talbot, Nakusp, BC

Hamilton, D., S.F. Wilson, C. Steeger, R. Serrouya and B. Herbison. 2003. Recovery Action Plan for the South Kootenay Mountain Caribou Populations. Draft Report. Prepared for South Kootenay Recovery Action Group.

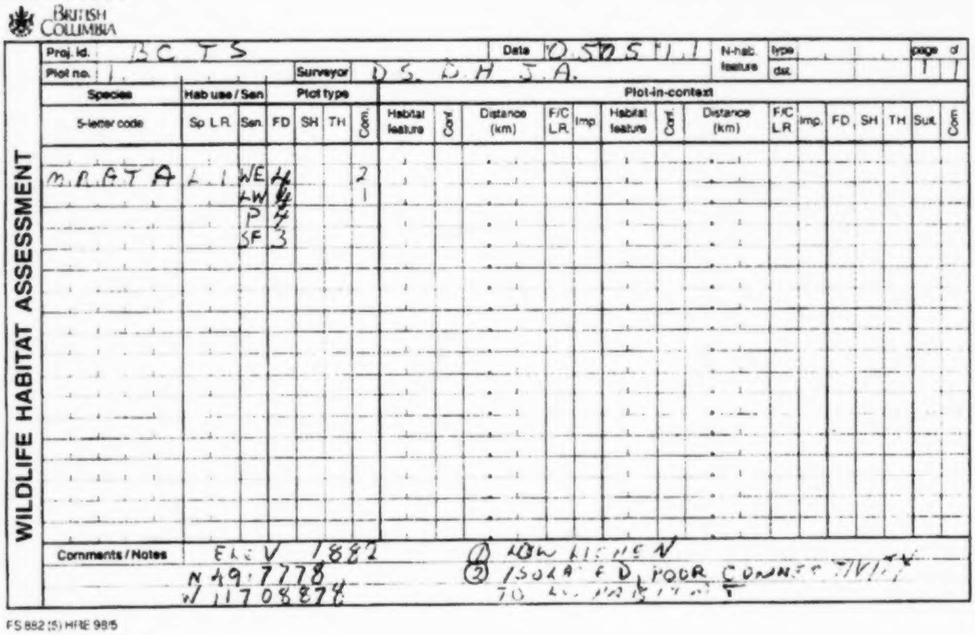
Ministry of Sustainable Resource Management. 2005. Kootenay-Boundary Higher Level Plan Order – KBLUP-04.

Resource Inventory Committee (RIC). 1998. Field manual for describing terrestrial ecosystems. Land Management Handbook No. 25. BC Ministry of Forests and BC Ministry of Environment, Lands and Parks, Victoria.

Resource Inventory Committee (RIC). 1999. British Columbia wildlife habitat rating standards, version 2.0. BC Ministry of Environment, Lands and Parks, Victoria.

Appendix 1: WHA field cards

WHA Plot 1



BRITISH COLUMBIA

Proj. id. BCTS

Date 050511

N-hab. feature type / dist.

page 1 of 1

Plot no. 1

Surveyor D.S. D.H. J.A.

Species	Hab use / Sen		Plot type				Plot-in-context															
5-letter code	Sp L.R.	Sen.	FD	SH	TH	Con.	Habitat feature	Conf	Distance (km)	F/C L.R.	Imp	Habitat feature	Conf	Distance (km)	F/C L.R	Imp.	FD	SH	TH	Suit.	Con
M.R.A.T.A	L.1	WE	4			2															
		LW	4			1															
		P	4																		
		SF	3																		

Comments / Notes ELEV 1882

N 49.7778

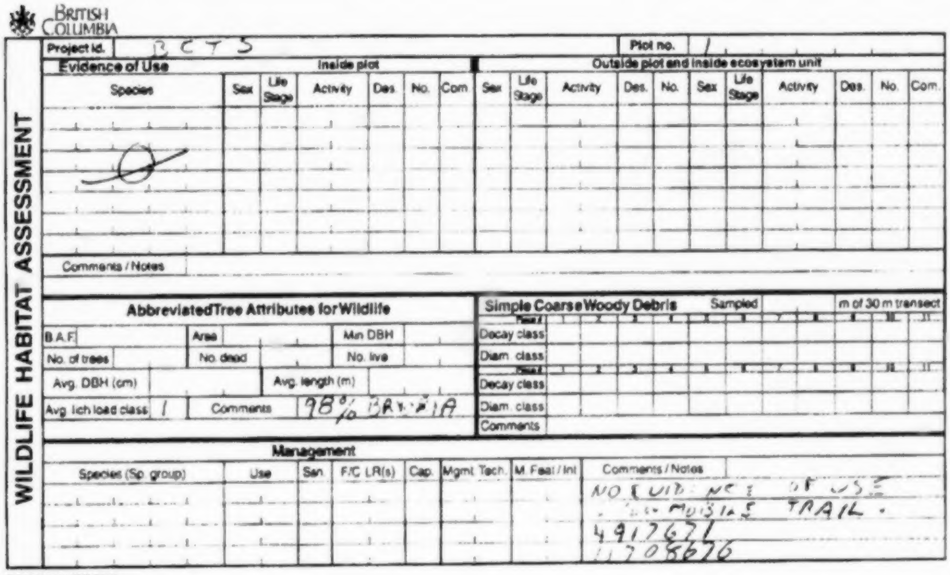
W 11708878

① LOW LICHEN

② ISOLATED, POOR CONNECTIVITY TO [illegible]

WILDLIFE HABITAT ASSESSMENT

FS 882 (5) HRE 98/5



BRITISH COLUMBIA

Project id. BCTS

Plot no. 1

Evidence of Use	Inside plot						Outside plot and inside ecosystem unit										
Species	Sex	Life Stage	Activity	Des.	No.	Com	Sex	Life Stage	Activity	Des.	No.	Sex	Life Stage	Activity	Des.	No.	Com.
0																	

Comments / Notes

Abbreviated Tree Attributes for Wildlife

B.A.F.

Area

Min DBH

No. of trees

No. dead

No. live

Avg. DBH (cm)

Avg. length (m)

Avg. lich load class 1

Comments 98% BRYORIA

Simple Coarse Woody Debris

Sampled

m of 30 m transect

Piece #	1	2	3	4	5	6	7	8	9	10	11
Decay class											
Diam. class											

Piece #	1	2	3	4	5	6	7	8	9	10	11
Decay class											
Diam. class											

Comments

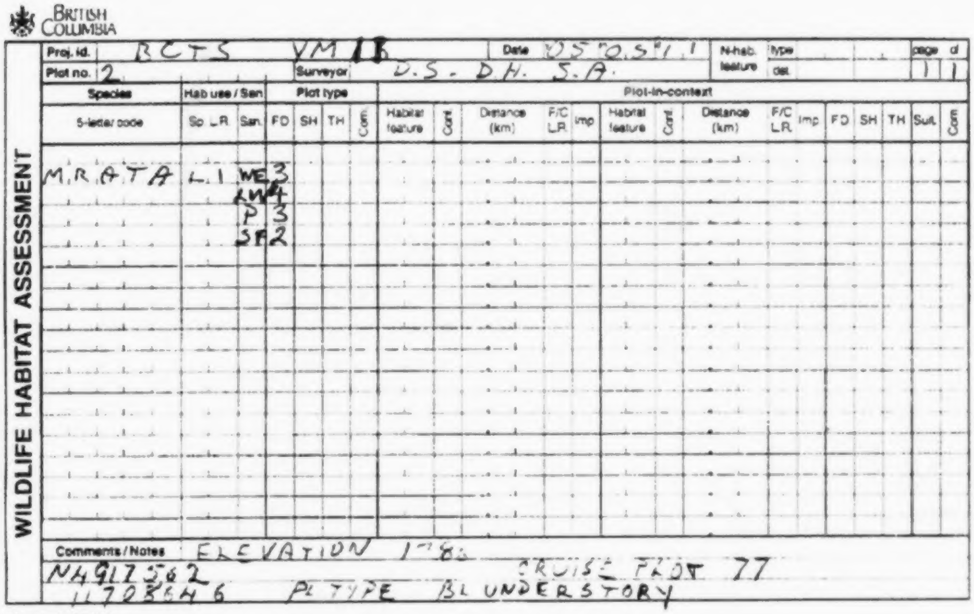
Management

Species (Sp. group)	Use	Sen	F/C LR(s)	Cap.	Mgmt. Tech.	M. Feat./Int	Comments / Notes
							NO EVIDENCE OF USE [illegible] MOBILE TRAIL. 4917671 11708676

WILDLIFE HABITAT ASSESSMENT

FS 882 (5) HRE 98/5

WHA Plot 2



BRITISH COLUMBIA

WILDLIFE HABITAT ASSESSMENT

Proj. id. BCTS YM 11

Date 05 05 11

N-hab. feature type

det.

page 1 of 1

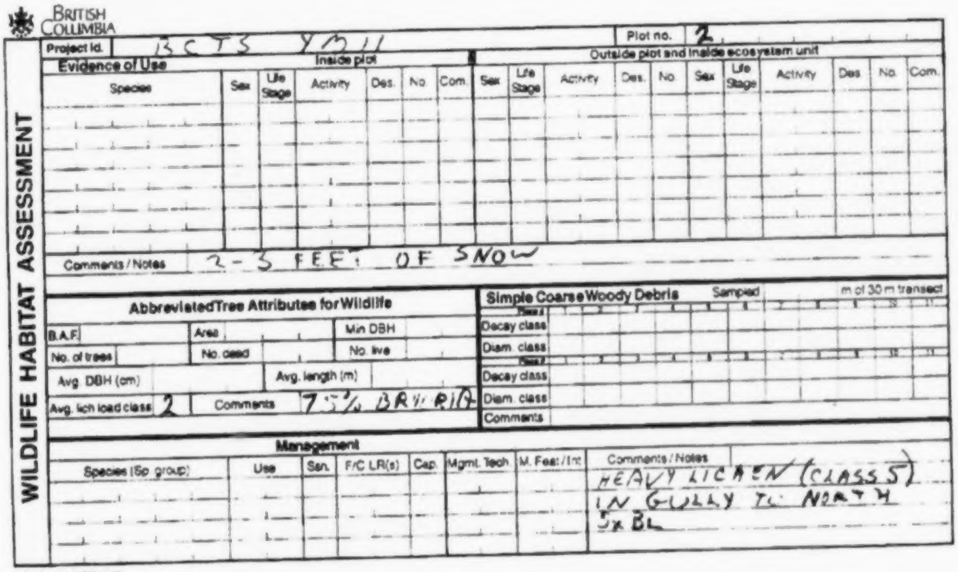
Plot no. 2

Surveyor D.S. - D.H. S.A.

Species	Hab use / Sen			Plot type				Plot-in-context															
5-letter code	Sp	LR	San.	FD	SH	TH	Com	Habitat feature	Cont	Distance (km)	F/C LR	Imp	Habitat feature	Cont	Distance (km)	F/C LR	Imp	FD	SH	TH	Suit.	Com
M.R.A.T.A	L	1	WE 3 LW 4 P 3 SF 2																			

Comments / Notes ELEVATION 1780
N4917562 CRUISE PLOT 77
11708646 PL TYPE BL UNDERSTORY

FS 882 (5) HRE 98/5



BRITISH COLUMBIA

WILDLIFE HABITAT ASSESSMENT

Project Id. BCTS YM11

Plot no. 2

Evidence of Use	Inside plot						Outside plot and inside ecosystem unit										
Species	Sex	Life Stage	Activity	Des.	No.	Com.	Sex	Life Stage	Activity	Des.	No.	Sex	Life Stage	Activity	Des	No.	Com.

Comments / Notes 2-3 FEET OF SNOW

Abbreviated Tree Attributes for Wildlife

B.A.F.

Area

Min DBH

No. of trees

No. dead

No. live

Avg. DBH (cm)

Avg. length (m)

Avg. lich load class 2

Comments 75% BRYORIA

Simple Coarse Woody Debris Sampled m of 30 m transect

Decay class

Diam. class

Decay class

Diam. class

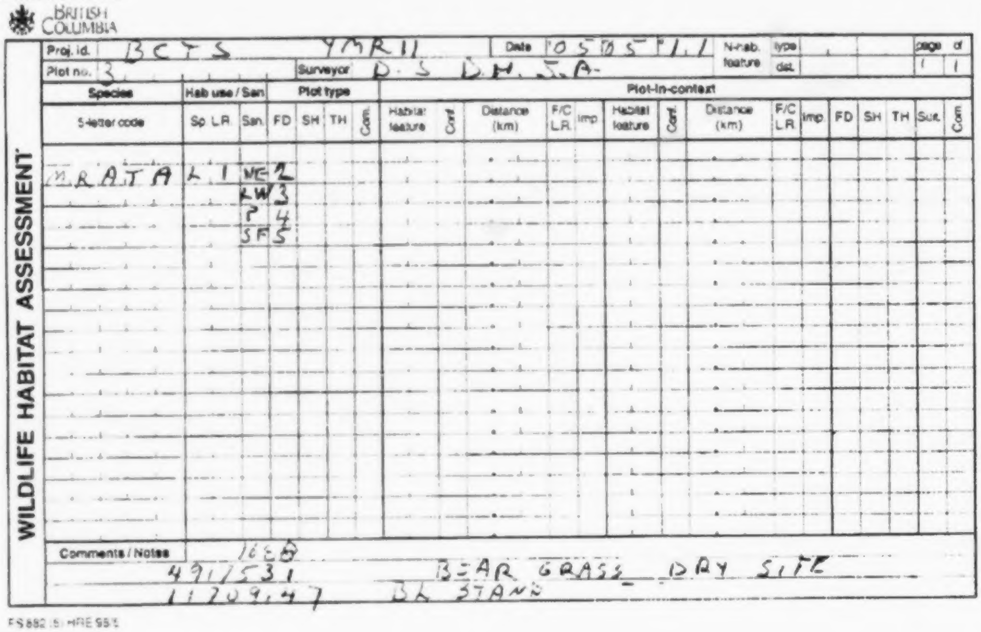
Comments

Management

Species (Sp. group)	Use	Ssn.	F/C LR(s)	Cap.	Mgmt. Tech	M. Feat / Int	Comments / Notes
							HEAVY LICHEN (CLASS 5) IN GULLY TO NORTH 5x BL

FS 882 (5) HRE 98/5

WHA Plot 3


BRITISH COLUMBIA

WILDLIFE HABITAT ASSESSMENT

Proj. id. BCTS YMR11

Date 05 05 11

N-hab. feature type / dist.

page 1 of 1

Plot no. 3

Surveyor D.S D.H. S.A.

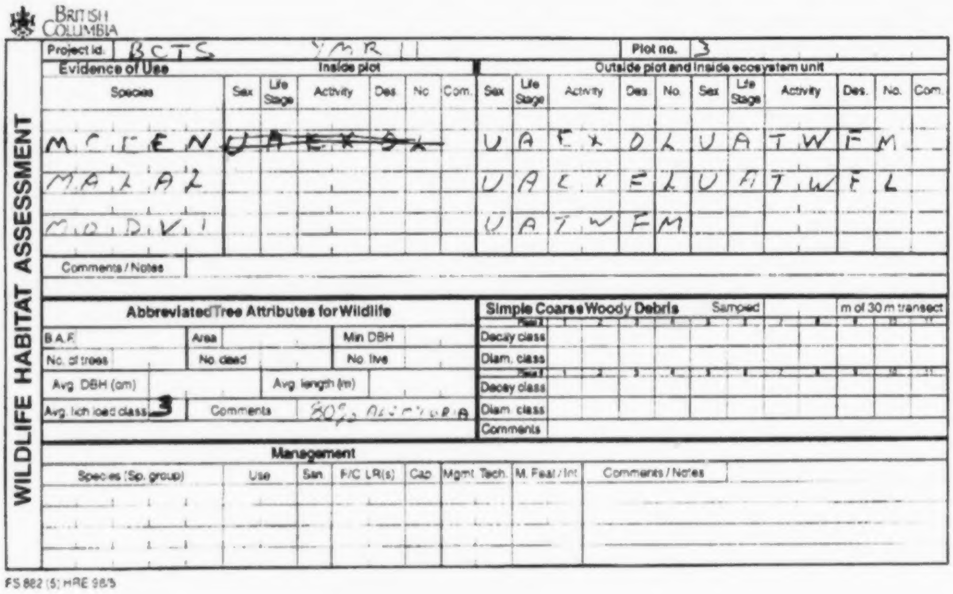
Species	Hab use / San		Plot type				Plot-in-context															
5-letter code	Sp. LR.	San.	FD	SH	TH	Com.	Habitat feature	Conf.	Distance (km)	F/C LR.	Imp.	Habitat feature	Conf.	Distance (km)	F/C LR.	Imp.	FD	SH	TH	Suc.	Com.
MRATA	L1	WE	2																		
		RW	3																		
		P	4																		
		SF	5																		

Comments / Notes 10 EB

491/531 BEAR GRASS DRY SITE

11709,47 BL STAND

FS 882 (5) HRE 98/5


BRITISH COLUMBIA

WILDLIFE HABITAT ASSESSMENT

Project id. BCTS YMR 11

Plot no. 3

Evidence of Use	Inside plot						Outside plot and inside ecosystem unit										
Species	Sex	Life Stage	Activity	Des	No	Com.	Sex	Life Stage	Activity	Des	No.	Sex	Life Stage	Activity	Des.	No.	Com.
MCTEN	~~U~~	~~A~~	~~EX~~	~~D~~	~~L~~		U	A	EX	D	L	U	A	TW	F	M	
MALAZ							U	A	LX	E	L	U	A	TW	F	L	
MODVI							U	A	TW	F	M						

Comments / Notes

Abbreviated Tree Attributes for Wildlife

B.A.F.

Area

Min DBH

No. of trees

No dead

No live

Avg. DBH (cm)

Avg. length (m)

Avg. lich load class 3

Comments 80% ALECTORIA

Simple Coarse Woody Debris

Sampled

m of 30 m transect

Piece #	1	2	3	4	5	6	7	8	9	10	11
Decay class											
Diam. class											
Piece #	1	2	3	4	5	6	7	8	9	10	11
Decay class											
Diam. class											

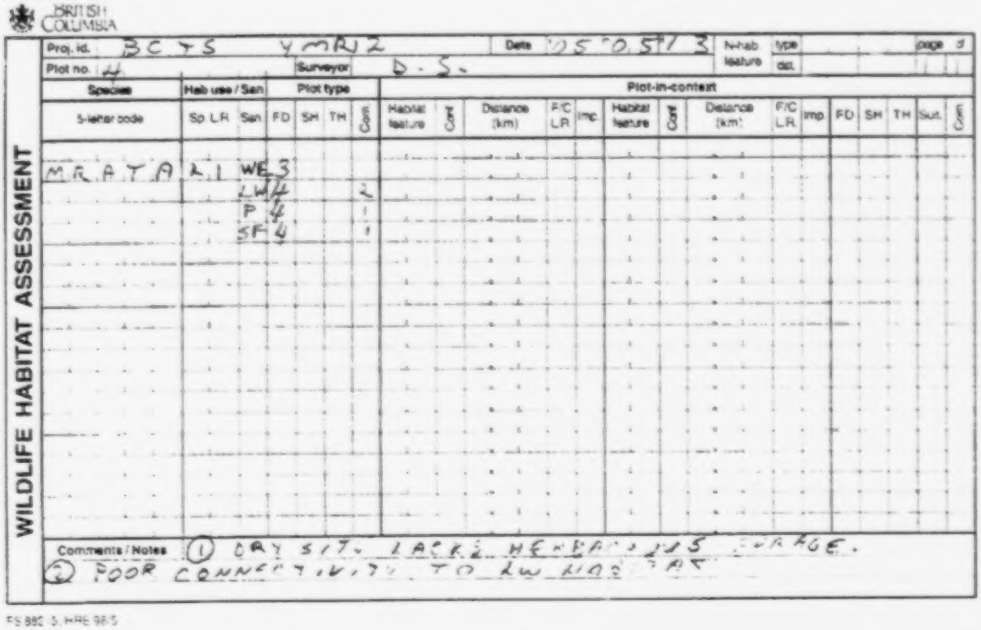
Comments

Management

Species (Sp. group)	Use	San	F/C LR(s)	Cap	Mgmt. Tech.	M. Feat./Int.	Comments / Notes

FS 882 (5) HRE 98/5

WHA Plot 4



BRITISH COLUMBIA

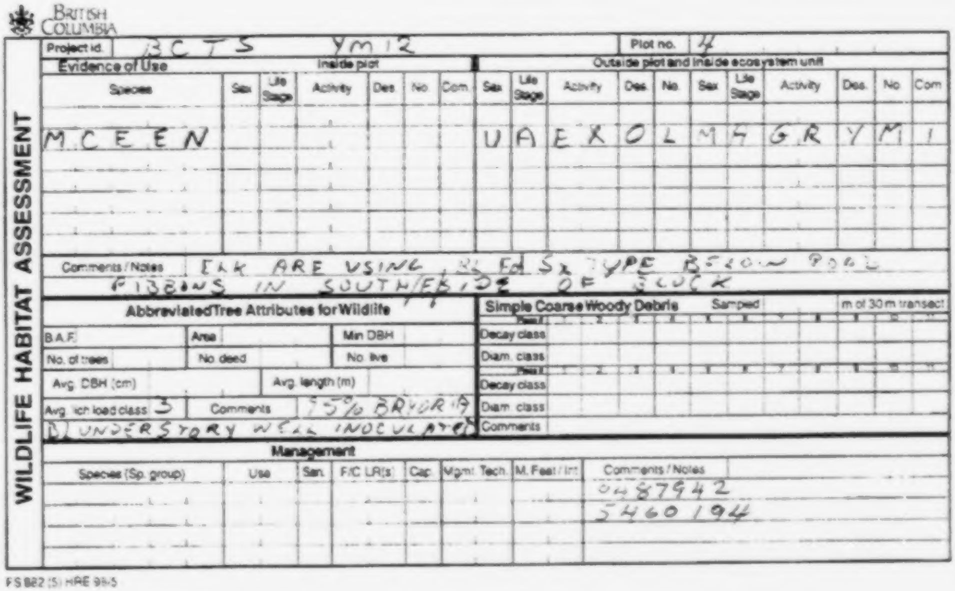
WILDLIFE HABITAT ASSESSMENT

Proj. id. BCTS YMR12
Date 05 05 13
N-hab. feature type
dist.
page
Plot no. 4
Surveyor D. S.

Species	Hab use / San		Plot type				Plot-in-context														
5-letter code	Sp. LR	San	FD	SH	TH	Conf	Habitat feature	Conf	Distance (km)	F/C LR	Imp.	Habitat feature	Conf	Distance (km)	F/C LR	Imp	FD	SH	TH	Suit.	Conf
MRATA	L1	WE	3																		
		LW	4			2															
		P	4			1															
		SF	4			1															

Comments / Notes ① DRY SITE LACKS HERBACEOUS FORAGE.
② POOR CONNECTIVITY TO LW HABITAT

FS 882 (5) HRE 98/5



BRITISH COLUMBIA

WILDLIFE HABITAT ASSESSMENT

Project id. BCTS YM12
Plot no. 4

Evidence of Use

Species	Inside plot						Outside plot and inside ecosystem unit										
	Sex	Life Stage	Activity	Des	No.	Com.	Sex	Life Stage	Activity	Des.	No.	Sex	Life Stage	Activity	Des.	No	Com
MCEEN							U	A	EX	O	L	M	F	GR	Y	M	1

Comments / Notes ELK ARE USING Bl Fd Sx TYPE BELOW POOL
FIBBONS IN SOUTH/E SIDE OF BLOCK

Abbreviated Tree Attributes for Wildlife

B.A.F.
Area
Min DBH
No. of trees
No dead
No. live
Avg. DBH (cm)
Avg. length (m)
Avg. lich load class 3
Comments 75% BRYORIA
Bl UNDERSTORY WELL INOCULATED

Simple Coarse Woody Debris

Sampled
m of 30 m transect

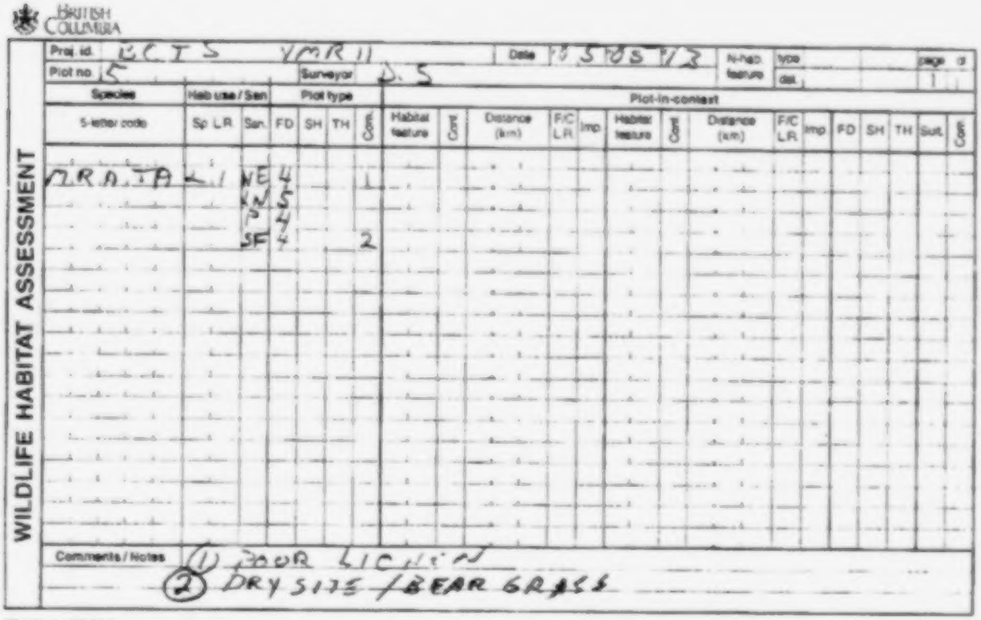
Piece #	1	2	3	4	5	6	7	8	9	10	11
Decay class											
Diam. class											
Piece #	1	2	3	4	5	6	7	8	9	10	11
Decay class											
Diam. class											
Comments											

Management

Species (Sp. group)	Use	San.	F/C LR(s)	Cap.	Mgmt. Tech.	M. Feat / Int	Comments / Notes
							0487942
							5460194

FS 882 (5) HRE 98/5

WHA Plot 5



BRITISH COLUMBIA

WILDLIFE HABITAT ASSESSMENT

Proj. id. BCTS YMR 11

Date 05 05 13

Plot no. 5

Surveyor D. S

N-hab. feature type

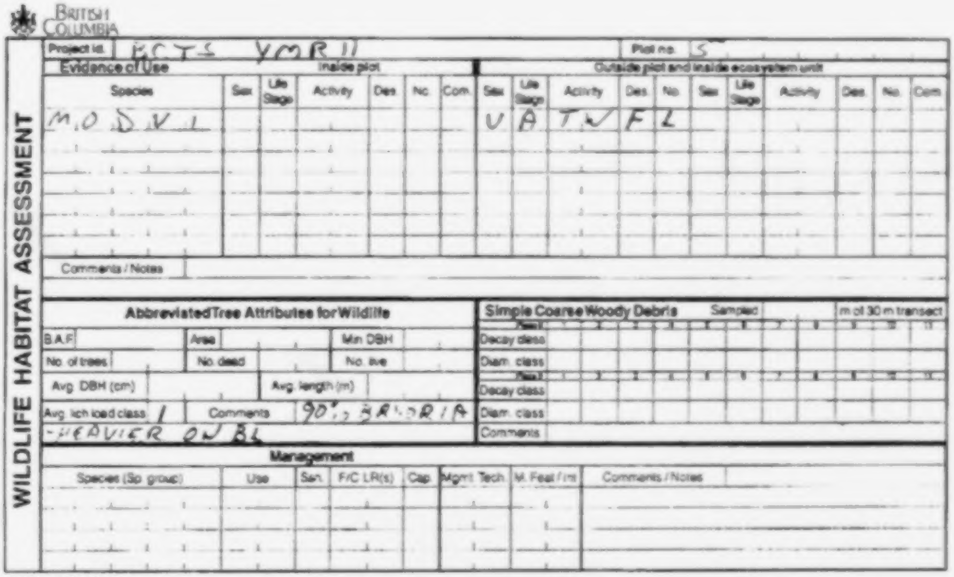
dist.

page 1

Species: 5-letter code	Hab use / San: Sp LR	San.	Plot type: FD	SH	TH	Com.	Plot-in-context: Habitat feature	Conf.	Distance (km)	F/C LR	Imp	Habitat feature	Conf.	Distance (km)	F/C LR	Imp	FD	SH	TH	Suit.	Com.
M-RATA	L1	WE	4			1															
		WN	5																		
		P	4																		
		SF	4			2															

Comments / Notes ① POOR LICHEN
② DRY SITE / BEAR GRASS

FS 882 (5) HRE 98/5



BRITISH COLUMBIA

WILDLIFE HABITAT ASSESSMENT

Project id. BCTS YMR 11

Plot no. 5

Evidence of Use

Species	Inside plot: Sex	Life Stage	Activity	Des.	No.	Com.	Outside plot and inside ecosystem unit: Sex	Life Stage	Activity	Des.	No.	Sex	Life Stage	Activity	Des.	No.	Com.
M-ODVI							U	A	TW	F	L						

Comments / Notes

Abbreviated Tree Attributes for Wildlife

B.A.F.

Area

Min DBH

No. of trees

No. dead

No. live

Avg. DBH (cm)

Avg. length (m)

Avg. lich load class 1

Comments 90%, BRYORIA -HEAVIER ON BL

Simple Coarse Woody Debris

Sampled

m of 30 m transect

Piece	1	2	3	4	5	6	7	8	9	10	11
Decay class											
Diam. class											
Piece	1	2	3	4	5	6	7	8	9	10	11
Decay class											
Diam. class											

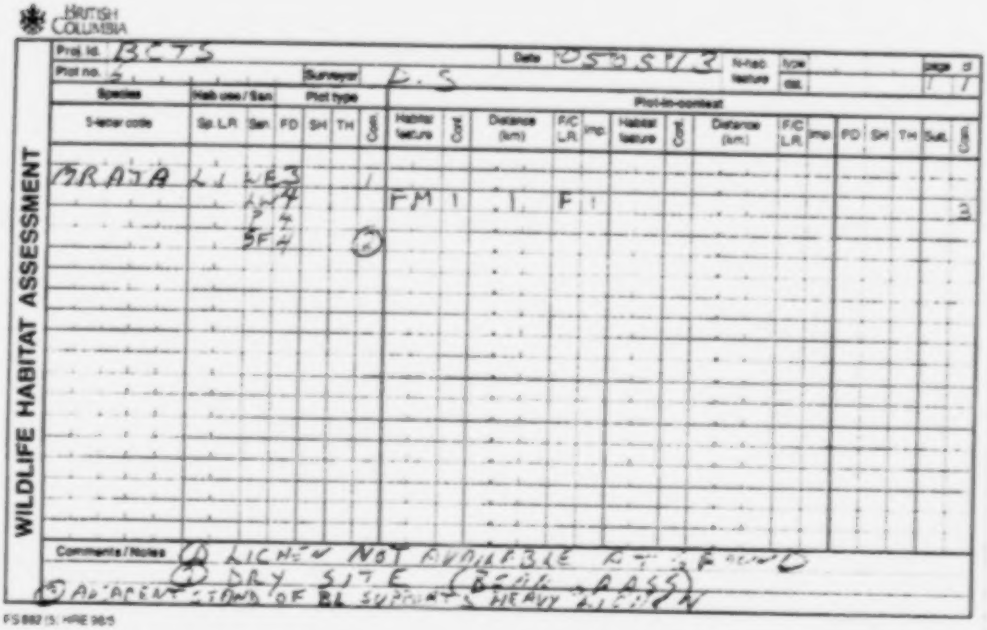
Comments

Management

Species (Sp. group)	Use	San.	F/C LR(s)	Cap.	Mgmt. Tech.	M. Feat / int	Comments / Notes

FS 882 (5) HRE 98/5

WHA Plot 6



BRITISH COLUMBIA

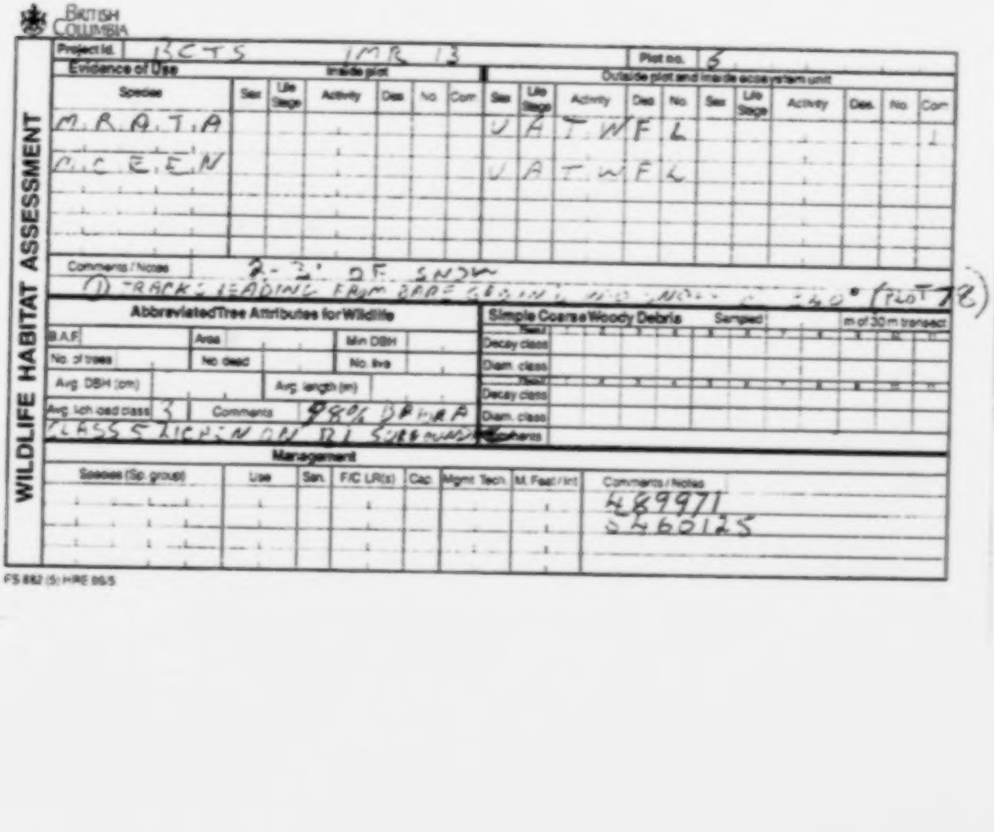
WILDLIFE HABITAT ASSESSMENT

Proj. Id. BCTS
Date 05 03 S 1/3
Plot no. 6
Surveyor D. S
N-hab feature: type / est.
page 1 of 1

Species: 5-letter code	Hab use / Ssn: Sp. LR	Ssn.	Plot type: FD	SH	TH	Conf.	Plot-in-context: Habitat feature	Conf.	Distance (km)	F/C LR	Imp.	Habitat feature	Conf.	Distance (km)	F/C LR	Imp.	FD	SH	TH	Suit.	Conf.
MRATA	LI	WE3 AW4 P4 SF4				1 ②	FM	1	.1	F	1										3

Comments / Notes ① LICHEN NOT AVAILABLE AT GROUND ② DRY SITE (BEAR GRASS) ③ ADJACENT STAND OF BL SUPPORTS HEAVY LICHEN

FS 882 (5) HRE 98/5



BRITISH COLUMBIA

WILDLIFE HABITAT ASSESSMENT

Project Id. BCTS IMR 13
Plot no. 6

Evidence of Use

Species	Inside plot: Sex	Life Stage	Activity	Des	No.	Con	Outside plot and inside ecosystem unit: Sex	Life Stage	Activity	Des	No.	Sex	Life Stage	Activity	Des.	No.	Con
M.R.A.T.A							U	A	T	WF	L						1
M.C.E.E.N							U	A	T	WF	L						

Comments / Notes 2-3' OF SNOW
① TRACKS LEADING FROM BARE GROUND AND SNOW @ 240° (PLOT 7/8)

Abbreviated Tree Attributes for Wildlife

B.A.F. | Area | Min DBH
No. of trees | No. dead | No. live
Avg. DBH (cm) | Avg. length (m)
Avg. lch load class 3 | Comments 98% BRHAA
CLASS 5 LICHEN ON BL SURROUNDS

Simple Coarse Woody Debris | Sampled | m of 30 m transect
Decay class
Diam. class
Decay class
Diam. class
Comments

Management

Species (Sp. group)	Use	Ssn.	F/C LR(s)	Cap	Mgmt Tech.	M. Feat / Int	Comments / Notes
							489971
							5460125

FS 882 (5) HRE 98/5

Oscar Creek Mountain Caribou Field Assessment Report (Hamilton and Seaton, 2005)

ADDENDUM NO. 1

June 29, 2005

This addendum provides changes to the *Oscar Creek Mountain Caribou Field Assessment Report* submitted May 23, 2005 to BC Timber Sales Program, Arrow-Boundary District.

Page 7, RESULTS and DICUSSION

Add the following language as a new paragraph at the end of the section:

> "In the short term, it is doubtful motorized access restrictions will be able to effectively mitigate habitat losses incurred as a result of the extent of existing forest harvest and further predicted reduction in habitat value resulting from extensive mountain pine attack. However, access management may be needed at some point in the future to support caribou recovery planning efforts."

Dennis Hamilton, RPBio.
Nanuq Consulting Ltd.
Nelson, BC

BRITISH
COLUMBIA

File: 10765-25 2001 FDP

August 3, 2005

Larry Peitzsche, R.P.F.
District Manager
Arrow Boundary Forest District
845 Columbia Avenue
Castlegar, BC
V1N 1H3

Dear Larry:

BC Timber Sales (BCTS), Kootenay Business Area (KBA), hereby submits for Review and Comment - Major Amendment #14 to the 2001-2006 Forest Development Plan for the Arrow Timber Supply Area, Arrow Boundary Forest District.

Amendment #14 has a 21 day review and comment period and will be made available for public review and comment commencing Wednesday, August 10, 2005 and ending Tuesday August 30, 2005.

Major Amendment #14 proposes the construction of 5.5 km of road in the Swehaw/Hun-Swe Creek drainage located in BC Timber Sales' operating area of Big Sheep Creek. The proposed road construction is required to provide timely access to Mountain Pine Beetle infested timber in the Hun-Swe Creek drainage.

I would like to bring the following points to your attention in regard to this amendment:

1. The Big Sheep Creek basemap has been updated to reflect the addition of Level D terrain information recently collected by BC Timber Sales in the Swehaw Creek drainage. Cutlbocks and roads approved with the original Forest Development Plan and FDP Major Amendment #11 have also been updated.

Ministry of Forests and Range and Ministry Responsible for Housing
Kootenay Lake Forest District
Location:
1907 Ridgewood Rd,
Nelson, B.C. V1L 6K1
Mailing Address:
1907 Ridgewood Rd,
Nelson, B.C. V1L 6K1
Tel: (250) 825-1100
Fax: (250) 825-9657

2. Appendix B: Engineering Table: the engineering table has been updated to reflect assessments completed or required to be completed in relation to the proposed development.

3. BC Timber Sales is in discussion with the Integrated Land Management Bureau representative in respect to Amendment #14. Amendment #14 will not cause conflict with the proposed OGMAs in the Hun-Swe drainage.

If you have any questions or comments regarding this plan please call the undersigned at the Kootenay Business Area Office (250-825-1132).

Yours truly,

Curt J. Nixon, RPF
A/ Planning Forester
BC Timber Sales
Boundary –Arrow Field Units

Attachment: Amendment # 14 Review and Comment Submission

Arrow Boundary Forest District
Arrow Timber Supply Area (TSA)
BC Timber Sales 2001-2006
FOREST DEVELOPMENT PLAN (FDP)
MAJOR AMENDMENT # 14: Swehaw/Hun-Swe Creek Road Construction

Initial Submission Date: August 8, 2005

Final Submission Date: August 31, 2005 (anticipated)

Amendment: #14 is a mandatory amendment submitted in accordance with Section 39(2) of the *Forest Practises Code of British Columbia Act* and Section 7 of the *Operational and Site Planning Regulation* (OSPR).

BC Timber Sales requested a shortened review and comment period for this amendment in accordance with Section 27(5) of the OSPR on July 14, 2005 to request approval to construct an additional 5.5 kilometres of road in the Swehaw/Hun-Swe Creek drainage to address mountain pine beetle infestation sites in BCTS' operating area of Big Sheep Creek.

This request for a reduced review and comment period was approved by the District Manager of the Arrow-Boundary Forest District on July 26, 2005.

The proposed road construction is to provide timely access for the expedited salvage and control of the infestation sites. The proposed development and recent policy changes have resulted in some changes and additions to the original FDP text. The following sections of the Arrow-Boundary Timber Supply Area 2001-2006 FDP (the plan) have been amended:

Section 1.4: Referral Process
Section 3.2: Biological Diversity Update
Section 3.2.2: Old and Mature Forest and Regional Connectivity
Section 3.3: Water
Section 3.3.2: Watershed Assessments- Domestic Watersheds
Section 3.3.3: Measures to Manage and Protect
Section 3.6: Wildlife
Section 5.0 Access Management Table- Consistency with Required Assessments
Section 7.0 Advertisements
Section 8.0 Review and Comment/Documentation and Referrals
Section 9.0 Summary of Changes- Changes made as a result of the Review and Comment (in Final Submission)
Section 10.0 Map: Big Sheep Creek composite Map.

The following information is attached:

Appendix B - Engineering Access Management Table for Big Sheep Creek
Appendix K – Legal Advertisements (Copies in Final Submission)
Appendix L – Referrals, Comment and Review Comments (including copies of letters received and responses made in Final Submission)
Appendix M – Summary of Changes made to this plan amendment as a result of Review and Comment- in Final Submission
Appendix O- Forest Health Rationale Table

Reason for Amendment:

Under this amendment, BC Timber Sales (BCTS) seeks approval to construct approximately 6.0 kilometres of additional road to provide timely access to address known Mountain Pine Beetle infestation sites. Expedited road construction in Swehaw/Hun-Swe Creek will provide BCTS the opportunity to minimize the loss, damage or destruction in timber values of the infested stands or stands of timber identified as susceptible stands.

In support of this amendment, BCTS has completed two supporting documents (which are available under separate cover): The first document is the Swehaw Creek Total Chance Plan (TCP) (Interim Report, Phase II, July 2005) which will serve to guide future road development and cut block planning in the Swehaw Creek Drainage. The second document is the Pine Management Priority Report -conducted in the fall of 2004 and completed March 2005- (the strategy). BCTS proposes to utilize the susceptibility ratings provided by the strategy in combination with ground surveys to commence a proactive planning initiative to be in a position to address beetle populations as the infestations move into the identified susceptible stands.

The proposed road segments identified in Amendment # 14 (Hun-Swe Main, Hun-Swe 5000 and Hun-Swe 6000) have been proposed in accordance with the TCP and the strategy. At the request of the Arrow Boundary District staff at previous FDP Round Tables, BCTS has also provided additional supporting forest health rationale for the proposed road construction. Details are provided in Appendix O.

The proposed development has resulted in some changes and additions to the original FDP text which are identified below:

Description of the Amendment:

1. The following table shows the additions to the plan of the following road segments required to provide access to address Mountain Pine Beetle infestation sites and stands of susceptible timber:

Mapsheet #	Location	Length of proposed road added to the Plan
Big Sheep-Swehaw Creek	Hun-Swe Creek Main Line	2.5 km
Big Sheep-Swehaw Creek	Hun-Swe 5000	1.5 km
Big Sheep-Swehaw Creek	Hun-Swe 6000	1.5 km
		Total: 5.5km

2. Further details of the proposed development are shown on the Engineering Access Management Table (Appendix B).

Brief Highlight of Changes and Rationale:

Changes to Category "A" roads from previous plan amendments:

Mapsheet	Road #	Nature of Amendment
Big Sheep Creek	Hun-Swe Mainline, and Hun-Swe Spur 5000 and 6000	With reference to FDP Am #11 Mapsheet : Big Sheep Creek, Swehaw Drainage, approved spur into Hun-Swe has a refined location shown here in Amendment #14. General location remains unchanged, Status thus remains as 2.5 km of approved road. New proposed road: Extend the Hun –Swe mainline (2.5km) , and then Hun-Swe Spur 5000 (1.5km) and Spur 6000 (1.5km) are proposed to access Mountain Pine Beetle infested timber in accordance with the Swehaw Creek TCP and the strategy. BCTS has provided a Cat I block (BS20) to indicate approximate location of proposed blocks in a future amendment to the Plan. Engineering Access table has also been updated for the assessments completed or planned for completion on related segments of approved and/or proposed roads.

The following statements are to be added to the FDP text:

Measures to Protect-General

The general measures to protect non-timber resources described in the BC Timber Sales Arrow TSA 2001-2006 FDP dated September 20, 2001 (date of final revisions) apply to the proposed roads contained herein.

Section 1.4 Referral Process

Activity	Date (yyyy/mm/dd)	Location (and media with respect to Public Review)	Comments Received (Y/N)	Date (yyyy/mm/dd)
Submission of Amendment 14				
Ministry of Forests	**August 10 2005**	Arrow Boundary Forest District	**Pending**	**Pending**
Public Review				
Advertising			**Pending**	**Pending**
(first publication)	**Wednesday August 10, 2005**	Castlegar Citizen- Castlegar, BC Trail Daily Times – Trail, BC Ministry of Forests - Official Notices Website		
Deadline for Comments	**Tuesday August 30, 2005**	Kootenay Lake Forestry Centre, Nelson, BC	**Pending**	**Pending**
Referral Letters:				
Agencies:				**Pending**
Land & Water BC	**August 5, 2005**	Kamloops, BC	**Pending**	
Energy and Mines		Cranbrook, B.C.		
First Nations:	**August 5, 2005**			**See Appendix L**
See list in Appendix L		Various	**Pending**	
Affected Stakeholders:	**August 5, 2005**			
Ranchers		See list in Appendix L		**See Appendix L**
Trappers				
Water License Holders				
Final Submission for Approval (if necessary)	**TBD**	Arrow Boundary Forest District		
Anticipated Approval Date	**TBD**			

Amendment # 14 for the Arrow Boundary Forest District was advertised on the Ministry of Forests - Official Notices Website and in local newspapers including the Castlegar News, and the Trail Daily Times. Copies of legal advertisements are located in Appendix K.

Referral letters have been sent to a number of individuals, licensed resource users, First Nations, government agencies, and any applicable organized groups. A referral list is provided in Appendix L along with samples of letters sent to indicated parties.

Any responses that will be received from interested parties during the Review and Comment period will be provided in Appendix L upon Final Submission.

Communications with First Nations for Amendment #14 Arrow Timber Supply

BCTS applied for and received a reduced comment and review period of 21 days for Amendment #14. To ensure First Nations received adequate time to review the amendment BCTS committed to emailing and phoning First Nations ahead of time, to advise them of the reduced advertising period. Curt Nixon sent an email to all First Nations indicated in Appendix L on July 18, 2005. This email was designed to provide First Nations with advanced notice that Amendment #14 was requesting a reduced review and comment period. Curt Nixon then followed this email up with a phone call to each of the First Nations listed below, which explained the nature of Amendment #14. The table below summarizes those phone calls.

Table 1
First Nations Contacts

Okanagan Nation Alliance	Left message on Pauline Terbasket's voice mail on July 18, 2005 referring to the advanced notice email. I also quoted the Altamira report recommendations that no AOA attributes were determined to exist in the proposed area.
Lower Similkameen Indian Band	Telephoned Steve Borsock on July 22, 2005 to draw his attention to the early warning email. Steve indicated that he would also like the recommendations provided by Altamira Consulting – who I indicated had completed a AOA for the drainage with not archeological sites determined to exist.
Okanagan Indian Band	I left a message with Mathara Polley, clerk advising the Band of the advanced notice email on July 22, 2005.
Osoyoos Indian Band	Left a message for Steve Jones on July 19, 2005 with details of the nature of the advanced notice email. Steve has yet to return my call.
Penticton Indian Band	Contacted Greg Gabriel on July 19, 2005. Greg acknowledged receipt of the proposed email, and indicated that I should ensure that I send the letter to the Okanagan First Nations Alliance.
KKTC	I left a message for Ray Warden on his voice mail on July 22, 2005.
Lower Kootneay Band	I was unable to leave any message on July 22, 2005 as the Band's voice mail system was full- and accepting no new voice mail messages
Westbank First Nation	Left voice mail and then later Spoke with Larry Derrickson On July 22 about the proposed reduced advertising period. He acknowkedged receipt of the email and talked at length about contract opportunities for First Nations with BCTS.

Spallumcheen Indian Band	Telephoned Loretta on July 18, 2005 and left a message as she is on leave. I left a message with Patsy Muscrat, Clerk to advise the Band of the email that I send the Band dated July 18, 2005 detailing the requested reduced advertising period.

In addition to the telephone calls BCTS sent referral letters and a general location map to all First Nations on the list above. A copy of these letters is attached in Appendix L.

BCTS awaits comment from First Nations in regard to this Amendment.

BCTS feels that we have provided ample opportunity through phone calls and emails for First Nations to provide comment on Amendment #14. In addition we have indicated in our referral letters that consultation with the district was available and no response has yet been received by the district.

Section 3.1.1 Measures to Protect Forest Resources: Timber

Issues

Mountain pine beetle attack in lodgepole pine continues to be the largest cause of catastrophic timber mortality within BCTS' operating areas. Aerial overview surveys, ground reconnaissance and detailed susceptibility mapping conducted over the BCTS' operating areas in 2004 confirm on-going heavy mountain pine beetle attack throughout the areas identified in this amendment. The TCP for Hun-Swe Creek also confirms green attack infestation along the proposed road right of way.

Measures to Manage and Protect

As mentioned in the introduction, BCTS proposes to address beetle infestations through priority harvesting of the infested timber and to seek approval to develop timber at risk-identified in BCTS' Pine Management Priority Plan conducted in the fall of 2004.

Priority harvesting of infested timber are those stands with confirmed infestations of mountain pine beetle located in the Swehaw/Hun –Swe Creek Drainage.

Timber at risk areas are those stands identified in the Pine Management Priority Report (the strategy) prepared by Sattva Consulting in March of 2005. This strategy is designed to provide BCTS and the District Manger of the Arrow-Boundary Forest District with a comprehensive and practical plan to address mountain pine beetle susceptible stands in the short to mid-term (5-10 years).

Amendment #14 is consistent with the strategy and is designed to facilitate access to identified stands in the Swehaw/Hun Swe Creek drainage.

Section 3.2.2 Measures to Protect Forest Resources: Biodiversity Targets

Objectives for the distribution of old and mature-plus-old seral stages are established in the Kootenay Boundary Higher Level Plan Order (KBHLPO). This order requires that all proposed harvest blocks be assessed against availability of forest cover age classes to ensure achievement of seral stage targets for each landscape unit.

BC Timber Sales has applied KBHLPO Variance #06 which permits the harvesting of infested timber, despite the requirement of objective 2.

Landscape Unit 501.

Proposed development consists of approximately 5.5 km of new road construction. The proposed development is outside connectivity, transitioning from the ICH dw (with a biodiversity emphasis of intermediate, with a mature and old mature requirement applicable) to the ICH mw2 (with a biodiversity emphasis of low, with a mature and old mature requirement applicable). With reference to the Fall 2003 Dataset of Fretwell Tables (most accurate data available)-sufficient area is available in age class 6 (in the ICHdw) and age class 7 (ICHmw2) and less to support this development. The proposed development is consistent with this requirement.

Section 3.2.2 Measures to Protect Forest Resources: Old Growth Management Areas

BC Timber Sales is working closely with the Ministry of Agriculture, Integrated Land Management Bureau (ILMB) representatives to rationalize conflicts between the proposed Old Growth Management Areas (OGMAs) and the proposed BC Timber Sales development within Swehaw Creek drainage.

Currently, proposed roads in Amendment 14 do not conflict with the proposed OGMAs in the Hun-Swe drainage. BC Timber Sales will seek approval from ILMB representatives to construct future roads through proposed OGMAs as these roads will be required to access high priority pine as well as non-pine types. At this time, BCTS is not requesting approval of the other roads shown in the Hun-Swe drainage as these are identified as Category I- for information only.

Specifically:

Big Sheep Creek - The Swehaw Mainline Road received approved status with the approval of the Plan. The first 2.5 km of the Hun-Swe Mainline also received approved status with the approval of the Plan. The proposed Hun-Swe and Swehaw OGMA does not restrict the construction of the Swehaw Road nor other blocks previously approved.

Amendment #14 proposes an additional 5.5 km of new road construction. This construction does not impact proposed OGMAs.

Section 3.3.2 Watershed Assessments

Under Amendment # 14 development is proposed within Sub Basin 2 of the Swehaw Creek Drainage. Swehaw Creek is a domestic watershed.

Domestic Watersheds:

Section 3.3.3 Measures to Manage and Protect

BC Timber Sales has undertaken to determine ECA updates of domestic watersheds that are involved in this amendment. The drainage is: Hun-Swe Creek, Swehaw Creek Sub-basin 2.

Amendment # 14 falls within the boundaries of the following domestic-use (consumptive) watershed as summarized below. BCTS has completed an Equivalent Area Cut (ECA) update and the results are presented below. BCTS proposes no ECA management strategy at this time as ECA percentages are currently well below the 15% threshold as required in the District Manger Instructions for the Arrow-Boundary Forest District.

Map Sheet	Name	Total Area (ha)	Existing ECA%*	Proposed harvesting Area (ha)	Proposed ECA% (Total)	Report Card Submission Date if Required
Big Sheep	Swehaw Cr. SB2	1251	0.0	16 (road)	1.3	N/A

Drainage Details:

Swehaw Creek: Sub-Basin 2

Swehaw Creek, SB 2, has a total watershed basin area of 1251 ha and is classified as a Class 3 watershed in accordance with the KBLUP-implementation strategy. There is one point of diversion (POD) on the main stem of Swehaw Creek (PD28329). The first area of new development is located approximately 6 km upstream from the noted POD.

Swehaw Sub-basin 2 Report Card

Road Density	0.64 km/km2 (increase)
Number of Stream Crossings	8 (increase)
Roads on unstable slopes	0 km/km2 (no change)

Section 3.6 Measures to Protect Forest Resources: Wildlife

The proposed road development in Hun-Swe Creek is not located within known ungulate winter range planning cells.

5.0 Access Management-Road Construction, Modification and Assessment Table

For proposed roads where terrain stability field assessments, flat over steep assessments, or soil erosion field assessments are required, planned developments will be consistent with the results and recommendations of these assessments. For proposed roads to be used to access proposed development in the Road Construction, Modification, and Assessment Table (Appendix B) where terrain stability assessments are shown as completed; the development will be consistent with the results and recommendations of these reports.

7.0 Advertisements

Amendment # 14 for the Arrow Boundary Forest District was advertised on the Ministry of Forests - Official Notices Website and local newspapers including the Castlegar Citizen, and the Trail Daily Times. Copies of the legal advertisements will be located in Appendix K upon Final Submission of this Amendment.

8.0 Review and Comment/Documentation and Referrals

Referral letters, along with an accompanying suitable scale map (where required) have been sent to those individuals and organizations identified in Appendix L. Comments will be incorporated into the Amendment #14 upon final submission.

9.0 Summary of Changes

Based on the Review and Comment and referral process, changes will be made to Amendment #14. A Summary of Changes will be presented in Appendix M upon Final Submission.

10.0 Maps:

Updated copies of the following map is included with this document. The mapsheet has been updated to show new proposed development and to update the status of existing openings within BC Timber Sales operating areas.

Mapsheets: Big Sheep

To the best of my knowledge, this proposed amendment meets the requirements of the Forest Practices Code of British Columbia Act (FPCA), the regulations, and the instructions to the Arrow Boundary District Licensees with regards to FDP standards.

I request that you review FDP Amendment #14 and if it meets with your satisfaction, that you give effect to this amendment in accordance with Section 41 (1) of the FPC of BC Act.

I certify that I have reviewed this document and, while I did not personally supervise all the work described, I have determined that this work has been done to standards expected of a member of the Association of BC Forest Professionals.

Certified by (RPF):
BCTS Planning Forester

Date: ______________

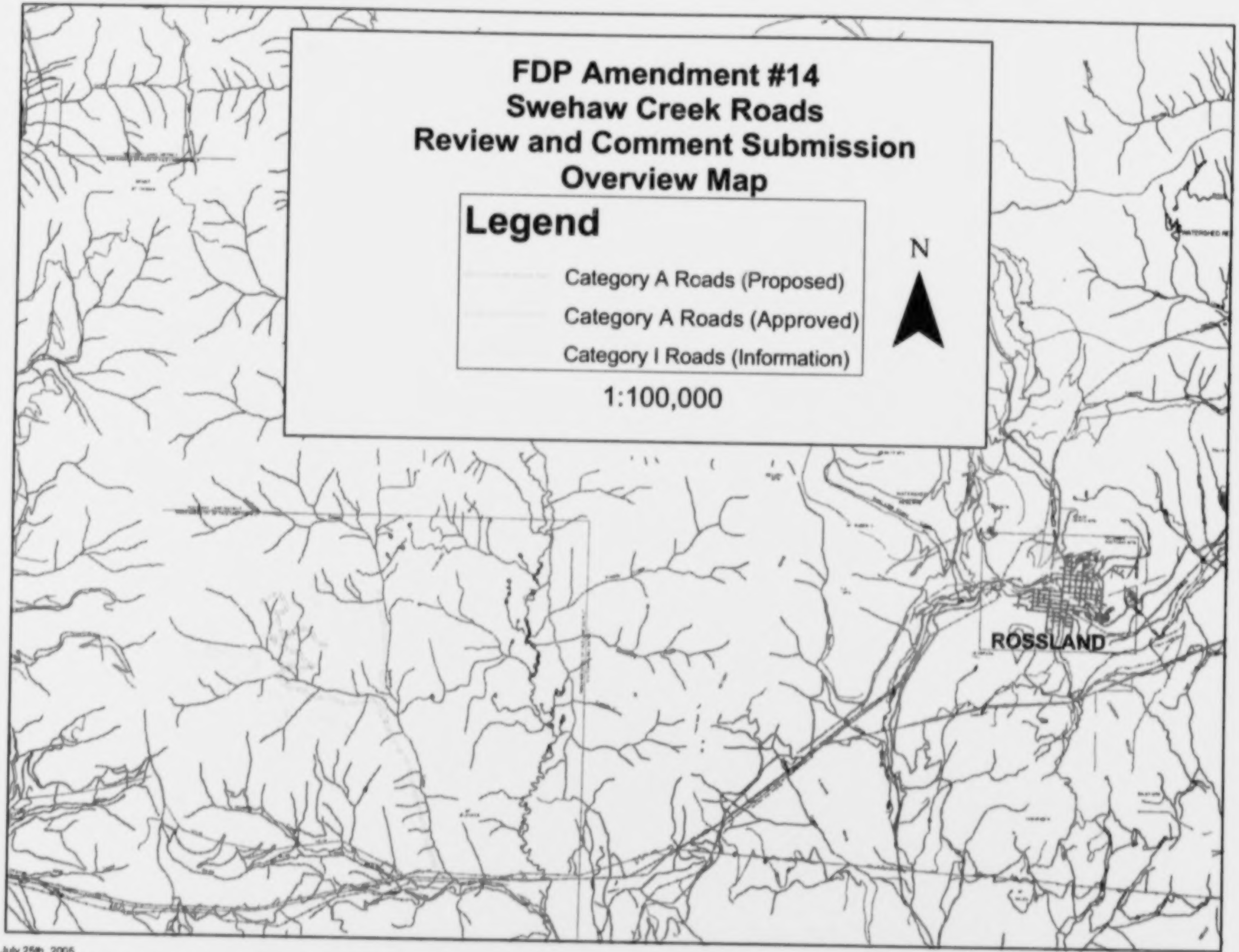
BCTS Forester (RPF)
Acknowledgement:

Date: ______________

Approved By:
Section 41(1) of the FPC of BC Act

District Manager
Or Authorized Person

Date: ____________________



FDP Amendment #14
Swehaw Creek Roads
Review and Comment Submission
Overview Map

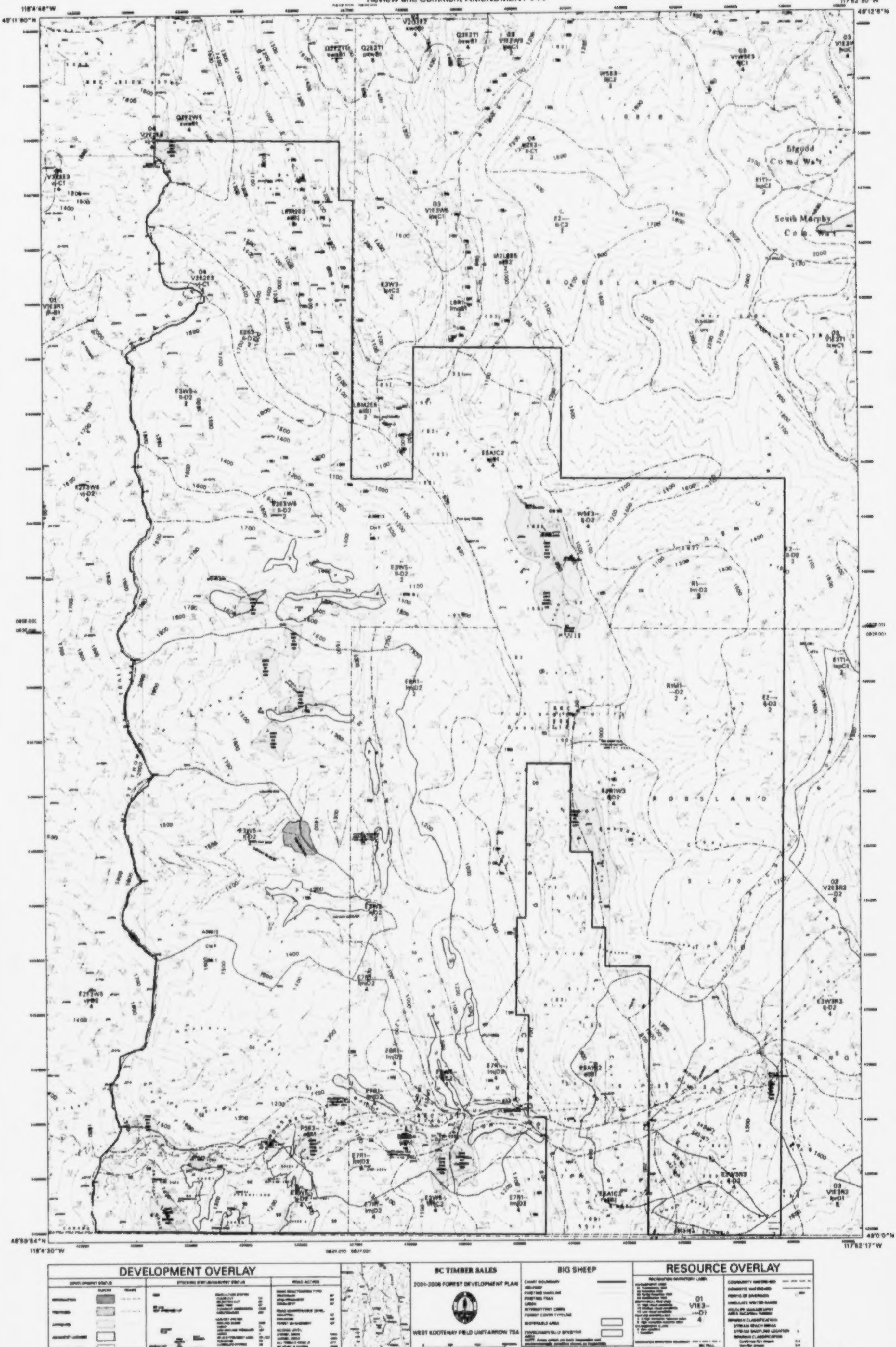
Legend

Category A Roads (Proposed)
Category A Roads (Approved)
Category I Roads (Information)

1:100,000

July 25th, 2005
N:\Forestry\2005\05bctn_FDP_Amendments\05bctn08_Amendment_14\MXD_Data\working_overview.mxd

BC Timber Sales 2001-2006 FDP-ARROW TSA/TFL 23
Review and Comment AMENDMENT #14


118°4'48"W
49°11'60"N
117°52'30"W
49°12'6"N
48°59'54"N
118°4'30"W
49°0'0"N
117°52'17"W
ROSSLAND
South Murphy Com. Wat
Elgood Com. Wat
DEVELOPMENT OVERLAY
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
WEST KOOTENAY FIELD UNIT-ARROW TSA
1:20,000
BIG SHEEP
RESOURCE OVERLAY
01
VIE3--
--D1
4
BIG SHEEP

Appendix B - ENGINEERING ACCESS MANAGEMENT TABLE

Map Reference	FSR # 11250-30-__, Name or TSL #	Branch / Spur	Prim. Resp.	Type of Road	Length / Location Nearest 0.1km	Current Access Level	Type / Year Works Proposed			Proposed Access Level	Bridges and Culverts over 2,000 mm	Terrain Stability Field Assessment	Archaeological Impact Assessment	Visual Impact Assessment	Surface Soil Erosion Assessment	Stream, Wetland and Lake Riparian Class	Dev. Status	Joint Sign-off / Approval
							C	M	D									
Big Sheep (Hun-Swe)	Hun-Swe Main	Hun-Swe Main	BCTS	P	2.5	N/A	2005	2005		DT	N/A	Required	Jul-05	N/A	N/A	S-5	A	N/A
Big Sheep (Hun-Swe)	Hun-Swe Main	Hun-Swe Main	BCTS	P	2.5	N/A	2005	2005		DT	N/A	Required	Jul-05	N/A	N/A	S-6	P	N/A
Big Sheep (Hun-Swe)	Hun-Swe	5000	BCTS	P	1.5	N/A	2005	2005		DT	N/A	N/A	N/A	N/A	N/A	S-6	P	N/A
Big Sheep (Hun-Swe)	Hun-Swe	6000	BCTS	P	1.5	N/A	2005	2005		DT	N/A	N/A	N/A	N/A	N/A	S-6	P	N/A
Big Sheep-Swehaw	0011 - Swehaw	Br.02	BCTS	P	4.3	N/A	2005	2005		DT	2-Intall over pipeline	Jul-04	N/A	N/A	N/A	S2 to S5	A	N/A
Big Sheep-Swehaw	0011 - Swehaw	Br.02	BCTS	P	11	N/A	2005	2005		DT	N/A	Required	Required	N/A	N/A	S2 to S5	A	N/A
Big Sheep-Swehaw	thru Block BS5	Spur A	BCTS	P	4	N/A	2007	2007		DT	N/A	Required	Required	N/A	N/A	S-6	A	N/A
Big Sheep-Swehaw	in Block BS8	Spur A	BCTS	P	1.3	NC	2007	2007		DT	N/A	Required	Required	N/A	N/A	S-6	A	N/A
	Updated assessments: Riparian Assessment by Ian Radridge, RP Bio, March 200																	
	Updated assessments: AOA completed by Altamira Consulting July 18, 2005																	
	Updated assessments: Level D terrain mapping by Carrol Wallace, P.Geo July 2005																	

Map Ref. No. (BCGS)	Geographic Location	TSL-Blk or Map ID and Unit#	Gross Area (0.1ha)	Vol m3/ha (All Species)	Vol m3 (Pl>12.5cm)	LU	Timber Type	Age	Bark Beetle	Infest. Level %	Green to Red ratio	Survey Type	Survey Date	Suscept and Risk Rating	Other Forest Health Factors	Treatment Schedule	Rationale	Source of Rationale
82E010	Big Sheep	BS-20 Cat I	40	185-280m3/ha	Not Available at this time	NS01	Pl	81	IBM	>=50% Pl, with green attack observed	>=50% Pl, with green attack observed	Swehaw Phase II interm report and 2004 Measle Mapping Overview	July 2005 TCP and Fall 2004 overview	Moderate to High	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be required if harvesting does not occur prior to the Spring, 2006 flight.	Swehaw Phase II Total Chance Report prepared by Timberland Consultants Ltd. July 25, 2005 indicates several polygons where pin is greater than 50 percent by inventory recci line, and a moderate t high level of IBM green attack were observed on the road line. 2004 Measel mapping indicates areas of infestation and single tree attack Susceptible Pl types observed. Prompt forest management is require to address the developing IBM infestation in this susceptible type	Review of 2004 Measle Map results - C Nixon. July, 2005

BRITISH
COLUMBIA

File: 10765-25 2001 FDP

October 3, 2005

Larry Peitzsche, R.P.F.
District Manager
Arrow Boundary Forest District
845 Columbia Avenue
Castlegar, BC
V1N 1H3

Dear Larry:

BC Timber Sales (BCTS), Kootenay Business Area (KBA), hereby submits for Review and Comment - Major Amendment #15 to the 2001-2006 Forest Development Plan for the Arrow Timber Supply Area, Arrow Boundary Forest District.

Major Amendment # 15 is a two part amendment. Major Amendment # 15 Part 1 and Part 2 are presented together in one presentation available for review and comment at the locations noted below. Part 1 refers to proposed harvesting in Limpid Creek (McCormick Creek drainage). Part 2 refers to proposed harvesting in Dog Creek. The review and comment period for Part 1 and Part 2 commences on the same date as noted below.

Part 1 has been approved by the District Manager of the Arrow Boundary Forest District for a shortened review and comment period. The shortened review and comment period has been approved for 30 days. Part 1 shows proposed harvesting in the McCormick Creek area, near Nelway, B.C. to address infestations of Mountain Pine Beetle, Fir Engraver Beetle and Douglas Fir Bark Beetle.

Major Amendment # 15 Part 1 is available for review and comment from **October 12 2005 to November 10, 2005.**

Part 2 shows proposed harvesting in the Dog Creek area, south of the community of Deer Park, B.C. to address infestations of Mountain Pine Beetle. Part 2 is available for the standard 60 day review and comment period.

Major Amendment # 15 Part 2 is available for review and comment from **October 12, 2005 to December 10, 2005.**

A copy of Amendment # 15 Part 1 and Part 2 is available for review for the time period indicated above (viewing by appointment only) during regular business hours (Monday to Friday, 8:30 AM – 4:30 PM) at the following locations:

- Kootenay Lake Forestry Centre, 1907 Ridgewood Road, Nelson B.C. V1L 6K1.
  Call 250-825-1100 to book appointment to view and
- BC Timber Sales, Castlegar Field Team, Arrow Boundary Forest District Office, 845 Columbia Ave, Castlegar, B.C., V1N 1H3.
  Call 250-365-8670 or 250-365-8620 to book appointment to view.
- Or you can view a copy of this document on the Web at this location:
  F:\TKO\external\!publish\Forest Development Plans\Arrow FDPs\FDP_Amendment_15

I would like to bring the following points to your attention in regard to this amendment:

1. The Limpid Creek and Bull Dog map sheets have been updated to reflect the approved status of the adjacent cutblocks from FDP Amendment #11. The Harvest Table includes previously approved cutblocks with stand level assessments flagged as completed where applicable.

2. In addition to addressing known bark beetle infestation sites under Part 1 of this amendment, BC Timber Sales requests approval to develop additional areas based not only on known infestations but based as well on susceptibility of pine to the Mountain Pine Beetle infestation. The area proposed based on susceptibility is BU-23 in the Bull Dog Creek drainages. This area is proposed in accordance with BC Timber Sales' Pine Management Priority Report (March 2005) which serves to guide BC Timber Sales to develop a comprehensive pine management priority plan in order to address the anticipated expansion of the Mountain Pine Beetle populations into susceptible stands in the short to mid term. Additional rationale to propose these susceptibility units is based on feedback from Area Foresters, Practises Foresters and Field technicians in the respective Field Units of the KBA.

3. The domestic watershed report cards for each domestic watershed that is influenced by this amendment have been updated and presented in Amendment #15 where the proposed equivalent clearcut area (ECA) will exceed the limit specified in the District Manger Instructions. BC Timber Sales used the original Arrow Forest District information developed by Timberland Consultants in 2001 as a starting point and then completed additional office review updates conducted by a qualified professional to produce updated ECA snapshot estimate tables or updated report card attributes and development recommendations, where available for each Domestic Watershed.

4. BC Timber Sales is addressing the requirement to manage Ungulate Winter Range (UWR) by adopting the UWR linework and cover requirements presented in the *Forest and Range Practise Act* (FRPA), Section 7 Notice-Indicators of the amount, distribution and attributes of wildlife habitat. BC Timber Sales has completed an analysis for the Limpid Creek Map sheet, with results for Management Unit 326 presented herein.

5. BC Timber Sales is in discussion with the Ministry of Agriculture and Lands, Integrated Land Management Bureau (ILMB) representatives in respect to harvesting plans to address beetle infestation and the retention of suitable proposed old growth management areas (OGMAs). The harvesting of susceptible timber types will not cause conflict with the OGMAs as proposed blocks respect the proposed boundaries of the OGMAs except where noted. Specific development guidance in respect to the proposed OGMAs for the Field Units is provided in the text of this amendment. It is

understood by BCTS and ILMB representatives that in some cases, operationalization of development boundaries with respect to proposed OGMA boundaries will be refined at the stand level.

A replacement strategy has been developed by BCTS in cooperation with ILMB representatives for the Limpid Creek area. Reference should be made to the February 8, 2005 letter addressed to Stuart Clow, MSRM, and the September 27, 2005 letter, addressed to Stu Clow , ILMB relating to the continuance of this agreement.

6. BC Timber Sales has been in discussion with Ministry of Water, Land and Air Protection –Fish and Wildlife representatives, and the Columbia Basin Fish and Wildlife Conservation Program to address ungulate (Mule Deer) issues in the Limpid Creek area. Discussions are ongoing with stand level development.

7. BCTS has applied, where applicable, KBHLPO Variance #06 Objective 2(9) provisions to address Mountain Pine Beetle infestations in the Limpid and Dog Creek areas.

8. Under Amendment # 15 Part 2, BCTS has also proposed some additional language under visual resource management. This is designed to accommodate principles of good visual design and operational considerations with respect addressing extensive beetle infestations in a visually uniform stand.

If you have any questions or comments regarding this plan please call the undersigned at the Kootenay Business Area Office (250-825-1132).

Yours truly,

Curt J. Nixon, RPF
A/ Planning Forester
BC Timber Sales
Boundary –Arrow Field Units

Attachment: Amendment # 15 Review and Comment Submission- Part 1 and Part 2

Arrow Boundary Forest District
Arrow Timber Supply Area (TSA)
BC Timber Sales 2001-2006
FOREST DEVELOPMENT PLAN (FDP)
MAJOR AMENDMENT # 15
Initial Submission
Part 1 and Part 2

Initial Submission Date: October 12, 2005

The review and comment period for Part 1 and Part 2 of this amendment commence on the same date. Part 1 (Limpid Creek Mapsheet) will be made available for review and comment for 30 days. Part 2 of this amendment (Dog Creek Mapsheet) will be made available for review and comment for 60days.

Final Submission Date:

Part 1 November 18, 2005. Part 2 December 16, 2005

Amendment: #15 is a mandatory amendment submitted in accordance with Section 39(2) of the *Forest Practises Code of British Columbia Act* and Section 7 of the *Operational and Site Planning Regulation* (OSPR).

BC Timber Sales requested a two part review and comment schedule for this amendment. Part 1 of this amendment is located in Limpid Creek. Part 2 of this amendment is located in Dog Creek. Commencement of the review and comment period of this two part amendment will be on the same date- October 12, 2005.

Upon completion of the public review and comment period for Part 1, comments received will be incorporated into the Final Submission- Part 1 of 2 of Amendment #15. Once the review and comment period for Part 2 is completed, comments will be incorporated into the Final Submission- Part 2 of 2 of Amendment #15.

Part 1 Limpid Creek: a shortened review and comment period in accordance with Section 27(5) of the OSPR (30 days) was requested on August 24, 2005 , and further clarified on September 12, 2005 to address a forest health situation consisting of several fir engraver beetle infestation sites in BCTS' operating area of Limpid Creek. This request was approved by the District Manager of the Arrow-Boundary Forest District on September 19, 2005.

Part 2 Dog Creek: the regular 60 day review and comment period will apply for this part of Amendment #15. Comments must be received by the date noted for Part 2 in the referral letters and legal advertisement.

Part 1 and Part 2: Cutblocks and related roads are proposed for the expedited salvage and control of the infestation sites. The proposed development and recent policy changes have resulted in some changes and additions to the original FDP text. The following sections of the Arrow-Boundary Timber Supply Area 2001-2006 FDP (the plan) have been amended:

Section 1.4 Referral Process
Section 3.1.1 Measures to Protect Forest Resources- Timber
Section 3.2.2 Measures to Protect Forest Resources- Biodiversity Targets
Section 3.2.3 Measures to Protect Forest Resources- OGMAs
Section 3.2.5 Maximum Cutblock Size, Green-up and Patch Size
Section 3.3.2 Watershed Assessments
Section 3.3.3 Measures to Manage and Protect
Section 3.6 Wildlife
Section 3.6.3 Objectives for Known Ungulate Winter Range
Section 3.8 Visual Landscape Management
Section 3.8.1 Strategies for Visual Landscape Resource Management
Section 3.10 Range, Section 3.10.1 Issues
Section 4.1 Harvest Summary Table- Consistency with Required Assessments
Section 5.0 Access Management Table- Consistency with Required Assessments
Section 6.0 Forest Practises Variances
Section 7.0 Advertisements(legal adds in Final Submission for respective part)
Section 8.0 Review and Comment/Documentation and Referrals (in Final Submission for respective part)
Section 9.0 Summary of Changes- Changes made as a result of the Review and Comment (in Final Submission for respective part)
Section 10.0 Maps – including Bulldog and Ymir

The following information is attached:

Appendix A - Harvest Summary Table
Appendix B - Engineering Access Management Table
Appendix E - Biodiversity Summary Status
Appendix J – Forest Practices Variances
Appendix K – Legal Advertisements (in Final Submission for respective part)
Appendix L – Referrals, Comments and Review Comments (including copies of letters received and responses made for respective part)
Appendix M – Summary of Changes made to this plan amendment as a result of review and comment (in Final Submission for respective part)
Appendix O- Forest Health Rationale Table
Appendix P – Hydrological Assessment Recommendations

Reason for Amendment:

Under this amendment, BC Timber Sales (BCTS) seeks approval to address known Mountain Pine Beetle, Douglas Fir Beetle and Fir Engraver Beetle infestation sites to minimize the loss, damage or destruction in timber value of infested stands. This amendment seeks to also address stands of timber that have been assessed as having a moderate to severe susceptibility rating to mountain pine beetle which pose the potential for further loss in timber values in the near future (susceptible stands).

To support the proposal to develop susceptible stands, BCTS has completed a Pine Management Priority Report -conducted in the fall of 2004 and completed March 2005- (the strategy). BCTS proposes to utilize the susceptibility ratings provided by the strategy in combination with ground surveys, field reccis, or 2004 overview flights (provided by Field Services) to commence a proactive planning initiative to be in a position to address mountain pine beetle populations as the infestations move into the identified susceptible stands.

Cutblocks and related roads have been proposed in accordance with the strategy and based on field team recommendations.

Forest Practises Variances are addressed in Appendix J.

At the request of the Arrow Boundary Forest District staff at previous FDP amendment roundtables, BCTS has also provided additional supporting forest health rationale for the proposed blocks. Details are provided in Appendix O.

The proposed development has resulted in some changes and additions to the original FDP text which are identified below:

Description of the Amendment:

1. The following table shows the addition of cutblocks required to address the populations of Mountain pine beetle, Douglas fir Beetle and Fir engraver beetle infestation sites and stands of timber that have been assessed as having a moderate to high susceptibility rating to mountain pine beetle.

New Proposed Blocks to add to the Plan

Amendment 15 Part 1

Mapsheet (BCGS 82E)	Location	Licences and Blocks to add to the Plan		Area to add to the Plan (ha)
Limpid	Limpid Creek	Li-14	1	20.1
Limpid	McCormick Creek	Li-15	1	12.5
			Total:	32.6 ha

Amendment 15 Part 2

Mapsheet (BCGS 82E)	Location	Licences and Blocks to add to the Plan		Area to add to the Plan (ha)
Bull Dog	Dog Creek	BU23	1	345.0
			Total:	345.0 ha

Brief Highlights of Changes and Rationale

Amendment 15 Part 1

Mapsheet	TSL #	Nature of Amendment
Limpid	Li-14	Li-14 is Category A-proposed. This block is new to the plan. This block is proposed to address a known forest health issue- fir engraver beetle. Harvesting is to focus on Grand Fir removal plus other species where required due to: windthrow hazard; other forest health considerations; operationally required for appropriate silviculture activities, access or for safe logging operations. Final Site Plan will reserve as much dominate and codominate Douglas fir and other non-grand fir species, and deciduous- as operationally possible to address ungulate summer use of the area and maintain stand level old growth attributes. See Forest Health Rationale table for details. No permanent roads are proposed.
Limpid	Li-15	Li-15 is Category A-proposed. This block is new to the plan. This block is proposed to address a known forest health issue- fir engraver beetle. Harvesting is to focus on Grand Fir removal plus other species where required due to: windthrow hazard; other forest health considerations; operationally required for appropriate silviculture activities, access or for safe logging operations. Final Site Plan will reserve as much dominate and codominate Douglas fir and other non-grand fir species and deciduous- as operationally possible to address ungulate winter range cover requirements and maintain stand level old growth attributes. See Forest Health Rationale table for details. No permanent roads are proposed.

Amendment 15 Part 2

Mapsheet	TSL #	Nature of Amendment
Bull Dog	Bu-23	Bu-23 is Category A-proposed. This block is new to the plan. This block is proposed to address a known forest health issue- mountain pine beetle. Harvesting is to focus on Pine removal plus other species where required due to: windthrow hazard; other forest health considerations; operationally required for appropriate silviculture activities, access, or for safe logging operations. Final Site Plan will reserve as much non-pine species as operationally possible in consideration of domestic watershed management considerations, second pass opportunities and total chance road and harvesting considerations. See Forest Health Rationale table for details. A segment of permanent road will be required to access this unit.

Changes to Roads:

Amendment 15 Part 1

No roads are proposed under part 1 of this amendment.

Amendment 15 Part 2

The following roads are proposed under part 2 of this amendment:

Mapsheet	Road ID	Nature of Amendment
Bull Dog	BUR01	This road is Category A-proposed. This road will be permanent.
Bull Dog	BUR02	This road is Category A-proposed. This road will be permanent A TSFA will be required for this road
Bull Dog	BUR03	This road is Category A-proposed. This road will likely be temporary
Bull Dog	BUR04	. This road is Category A-proposed. This road will likely be temporary

2. Further details of the proposed development are shown on the Harvest Summary Table (Appendix A) and the Engineering Access Management Table (Appendix B).

The following statements are to be added to the FDP text:

Measures to Protect-General

The general measures to protect non-timber resources described in the BC Timber Sales Arrow TSA 2001-2006 FDP dated September 20, 2001 (date of final revisions) apply to the proposed cutblocks and roads contained herein. Where variances are required, they can be found in the Variance Table Appendix J.

Section 1.4 Referral Process- Part 1 and Part 2 of Amendment 15

Activity	**Date (yyyy/mm/dd)**	**Location (and media with respect to Public Review)**	**Comments Received (Y/N)**	**Date (yyyy/mm/dd)**
Submission of Amendment 15 Part 1 and Part 2				
Ministry of Forests	Prior to Oct 12, 2005	Arrow Boundary Forest District	**Pending**	**Pending**
Public Review				
Advertising (first publication) **Amendment #15 Part 1 and Part 2**	October 12, 2005	B.C. Gazette Castlegar News- Castlegar, BC Trail Daily Times – Trail, BC Ministry of Forests - Official Notices Website	**Pending**	
Deadline for Comments Amendment #15 Part 1 Amendment #15 Part 2	**November, 10, 2005** **December 10, 2005**	Kootenay Lake Forestry Centre, Nelson, BC	**pending**	**pending**
Referral Letters: Amendment #15 Part 1 and Part 2 Agencies: Land & Water BC Energy and Mines	October 3, 2005	Kamloops, BC Cranbrook, B.C.	**pending**	**pending**
First Nations: See list in Appendix L	October 3, 2005	Various	**pending**	**pending**
Affected Stakeholders: Ranchers Trappers Water License Holders	October 3, 2005	See list in Appendix L	**pending**	**pending**
Final Submission for Approval **Amendment #15 Part 1 of 2** **Amendment #15 Part 2 of 2**	Nov 18, 2005 Dec 16, 2005	TBD Arrow Boundary Forest District	pending	pending
Anticipated Approval Date **Amendment #15 Part 1 of 2** **Amendment #15 Part 2 of 2**	**TBD**		pending	pending

Amendment # 15 has been advertised on the Ministry of Forests - Official Notices Website, BC Gazette and local newspapers including the Castlegar News, and the Trail Daily Times. Copies of legal advertisements are located in Appendix K.

Referral letters have been sent to a number of individuals, licensed resource users, First Nations, government agencies, and organized groups. A referral list is provided in Appendix L along with samples of letters sent to indicated parties. Any responses received during the Review and Comment period applicable to the related parts of this amendment are provided in Appendix L.

Communications with First Nations for Amendment #15 Part 1 and Part 2

BCTS applied for and received a reduced comment and review period of 30 days for Amendment #15 Part 1 of 2. Part 2 of Amendment 15 is the standard 60 day review and comment period.

To ensure First Nations received adequate time to review Part 1 of the amendment BCTS committed to emailing and phoning First Nations at the time of approval of the reduced advertising period. Curt Nixon prepared and sent an email dated September 23, 2005 detailing the two part nature of amendment #15, and the reduced review and comment period- to all the first nations contacts listed in the referral list of Appendix L. Curt Nixon also followed up with a phone message to all the First Nations and the list below summarizes those phone calls.

First Nations Group	Details of Communications
KKTC	September 27, 2005 7:47 am: I left a message for Ray Warden in regard to my email of September 23. I asked that Ray should call Curt Nixon if he had any concerns in regard to this email. I indicated that BCTS would be sending a referral letter and map to the KKTC within a week or two
Lower Kootenay Band	September 27, 2005 7:47 am: I attempted to leave a message for Curtis but his voice mail was full. Curtis did respond to my email of September 23 with an email on Saturday, September 24 indicating that I should also send the Sept 23 email to Ray Warden of the KKTC.
Okanagan Nation Alliance	September 27, 2005 7:47 am: I left a message for Pauline Terbasket in regard to my email of September 23. I asked that Pauline to call Curt Nixon if she had any concerns in regard to this email. I indicated that BCTS would be sending a referral letter and map to the ONA within a week or two

Lower Similkameen Indian Band	September 27, 2005 7:47 am: I contacted Steve Borcsok. Steve indicated that he had received my email and that he would look for my referral letter and map in regard to this amendment. Steve also wanted to let BCTS know that in relation to their FRA, that the LSIB would be contacting BCTS in regard to establishing a relationship. I indicated that Steve should send BCTS an email to commence this discussion.
Okanagan Indian Band	September 27, 2005 7:47 am: I left a message for Jennifer Louis in regard to my email of September 23. I asked that Jennifer should call Curt Nixon if she had any concerns in regard to this email. I indicated that BCTS would be sending a referral letter and map to the OIB within a week or two.
Osoyoos Indian Band	September 27, 2005 7:47 am: I left a message for Tony Baptiste in regard to my email of September 23. I asked that Tony should call Curt Nixon if he had any concerns in regard to this email. I indicated that BCTS would be sending a referral letter and map to the OIB within a week or two.
Penticton Indian Band	. September 27, 2005 7:47 am: I left a message for Greg Gabriel in regard to my email of September 23. I asked that Greg should call Curt Nixon if he had any concerns in regard to this email. I indicated that BCTS would be sending a referral letter and map to the PIB within a week or two.
Westbank First Nation	September 27, 2005 7:47 am: I left a message for Larry Derrickson in regard to my email of September 23. I asked that Larry should call Curt Nixon if he had any concerns in regard to this email. I indicated that BCTS would be sending a referral letter and map to the WFN within a week or two. Larry called me back at 9:00 to indicate that he will look for the letter. Larry also expressed an interest in First Nations performing contracting work. I indicated to Larry that he should look for contracts labelled as EN2006 on BC Bid.
Spallumcheen Indian Band	September 27, 2005 7:47 am: I left a message for Ida Alexander in regard to my email of September 23. I asked that Ida should call Curt Nixon if she had any concerns in regard to this email. I indicated that BCTS would be sending a referral letter and map to the SIB within a week or two.

In addition to the email and telephone calls BCTS sent referral letters to all First Nations on the list above. A copy of these letters is attached in Appendix L.

BCTS is of the opinion that we have provided ample opportunity through phone calls and emails for First Nations to provide comment on Amendment #15 Part 1 and Part 2. In addition we have indicated in our referral letters that consultation with the district is available to assist in addressing First Nation's issues.

Section 3.1.1 Measures to Protect Forest Resources: Timber

Issues

Mountain pine beetle attack in Lodgepole pine continues to be the largest cause of catastrophic timber mortality within BCTS' operating areas. BCTS has also seen an increase in damaged timber due to Douglas-fir beetle and Fir Engraver Beetle. Aerial overview surveys, ground reconnaissance and detailed susceptibility mapping conducted over the BCTS' operating areas in 2004-2005 confirm on-going heavy mountain pine beetle, douglas fir beetle and fir engraver beetle infestations throughout the areas identified in this amendment.

Measures to Manage and Protect

As mentioned in the introduction, BCTS proposes to address beetle infestations through priority harvesting of the infested timber and to seek approval to develop timber at risk- identified in BCTS' Pine Management Priority Plan conducted in the fall of 2004.

Priority harvesting of infested timber are those stands with confirmed infestations of mountain pine beetle, fir bark beetle and fir engraver beetle.

Timber at risk areas are those stands identified in the Pine Management Priority Report (the strategy) prepared by Sattva Consulting in March of 2005. This strategy is designed to provide BCTS and the District Manger of the Arrow-Boundary Forest District with a comprehensive and practical plan to address mountain pine beetle susceptible stands in the short to mid-term (5-10 years). One specific areas where this plan will be utilized to address identified stands is located within the Bull Dog Creek drainage (refer to Part 2 of 2 references in this amendment).

Generally, it may be necessary to harvest infested timber utilizing clearcut systems. The preferred option however, in areas of extensive infestation, or in areas planned to address developing infestations, will be to focus on infested timber or timber at risk removal only, with retention of other species and the use of reserves to address stand level attributes as much as operationally feasible.

Section 3.2.2 Measures to Protect Forest Resources: Biodiversity Targets

Objectives for the distribution of old and mature-plus-old seral stages are established in the Kootenay Boundary Higher Level Plan Order (KBHLPO). This order requires that all proposed harvest blocks be assessed against availability of forest cover age classes to ensure achievement of seral stage targets for each landscape unit.

Landscape Units 509 and 504:

BC Timber Sales has applied KBHLPO Variance #06 which permits the harvesting of beetle infested timber, despite the requirement of objective 2.

Amendment # 15 Part 1
LU504

Proposed development is Li-14 and Li-15, at a total area of 32.6ha, with no roads to be constructed. The proposed development is generally inside connectivity, transitioning from ICHdw to ICHmw2, (with a biodiversity emphasis of intermediate for both BEC zones, with mature and old applicable, starting at age class 6 for both BECs) The calculations are to be viewed in context of the recruitment strategy developed February 8, 2005 by George Edney and Stu Clow for LU 504. Reference should be made to Appendix E for a copy of this letter and updates to the agreement. With reference to the BCTS woodfinder map for N504 dated August 2005, given that this amendment is driven by a forest health requirement to address mountain pine beetle infested timber (KBHLPO Variance #6), sufficient area is available in age class 5 and older in both BEC zones to support this development.

Amendment #15 Part 2
LU 509

Proposed development is BU-23, at a total area of 345ha, with approximately 7.2 kilometers of road to be constructed. The proposed development is outside of connectivity, transitioning from ICHdw to ICHmw2, (with a biodiversity emphasis of intermediate for both BEC zones, with mature and old applicable, starting at age class 6) With reference to the BCTS woodfinder map for N509 dated August 2005, sufficient area is available in age class 6 for both BEC zones to support this development. Harvesting will be focused in the age class 4 pine leading types as outlined in other sections of this amendment.

Section 3.2.3 Measures to Protect Forest Resources: Old Growth Management Areas

BC Timber Sales is working closely with representatives of the Integrated Land Management Bureau (ILMB) of the Ministry of Agriculture to rationalise conflicts between the ILMB proposed Old Growth Management Areas (OGMAs) and the proposed BC Timber Sales development units within the following drainages- Dog Creek and Limpid Creek.

Amendment 15 Part 1

For Limpid Creek, BCTS will continue with the agreement outlined in the February 8, 2005 letter, with the addition of the area of proposed LI-15 added to the total area previously outlined. See Appendix E for further details and continued commitments to this agreement.

Specifically:

- Limpid Creek- Development unit Li-15 is located within a proposed OGMA. BCTS proposes to add the area of LI-15 to the total area previously identified for replacement. (see Appendix E)

Amendment 15 Part 2

For the Dog Creek proposal , BC Timber Sales will not harvest areas that are shown to be within the proposed OGMAs that are age class 8 and non-Pl leading. BC Timber Sales will field verify the proposed block areas for timber type and age class that are within proposed OGMA polygons and develop site plans in accordance with this agreement.

Specifically:

- Dog Creek - Development unit BU-23 will reserve the adjacent age Class 8 fir/larch type as a proposed Old Growth Management Areas.

Section 3.2.5 Maximum Cutblock Size, Green-up and Patch Size

In cases where Category "A"-proposed cutblocks are proposed next to cutblocks identified as NSR, those units have been identified in Appendix J as requesting a variance under the Operational and Site Planning Regulation –Section 11(3) and the Timber Harvesting and Silviculture Practises Regulation -Section 6(2)(g) to address a Forest Health condition- mountain pine beetle, Douglas fir or fir engraver beetle.

Where development is shown adjacent to previously harvested blocks that have met green-up requirements, the previously harvested blocks have a white background.

Patch size analysis has not been done for blocks exceeding 40 ha in size due to forest health factors identified above in the reasons for this amendment.

Section 3.3.2 Watershed Assessments

Domestic Watersheds:

Section 3.3.3 Measures to Manage and Protect

BC Timber Sales has undertaken to determine ECA snapshots of domestic watersheds that are involved in this amendment. The drainages are: McCormick Creek and Dog Creek.

Specific Details:

Amendment # 15 falls within the boundaries of the following domestic-use (consumptive) watersheds as summarized below. BCTS has retained the services of a registered professional (hydrological assessment recommendations are presented in Appendix P) to complete an Equivalent Area Cut (ECA) snapshot update and the results are presented below:

Map Sheet	Name	Total Area (ha)	Existing ECA%*	Proposed harvesting Area (ha)	Proposed ECA% (Total)	Report Card Submission Date if Required
Amendment 15 Part 1						
Limpid Creek	McCormick SB1	371	29.19% (revised from Am #11 to include hydro r/w)	20.1	**46.8%**	N/A
Amendment 15 Part 2						
Big Sheep	Dog Creek (Total Drainage)	19607	13.9%	345	**15.6%**	N/A
Big Sheep	Dog Cr. SB3 (Quinn Creek)	856	15.4%	9.7	16.5%	N/A
	Total for Porcupine Cr- includes SB4, SB5, SB6	2172	37.2%	102.1	42.0%	N/A
	Dog Creek SB5	977	57.9%	23.1	60.2%	N/A

Amendment 15 Part 1:

McCormick Creek

McCormick Creek has a total watershed area of 371.1 ha and is classified as a Class 3 watershed in accordance with the KBLUP-implementation strategy. There is one point of diversion (POD) on the main stem of McCormick Creek . The closest area of new development is approximately 1.5 km upstream of PD28479. No new roads are proposed under this amendment.

McCormick Creek Report Card

Road Density	3.22 km/km2 (no change)
Number of Stream Crossings	14 (no change)
Roads on unstable slopes	0 km/km2 (no change)

Amendment 15 Part 2:

Dog Creek (total basin)

Dog Creek, Total Basin has a total watershed basin area of 19, 607 ha and is classified as a Class 3 watershed in accordance with the KBLUP-implementation strategy. There are 5 points of diversion (POD) on the main stem of Dog Creek. The closest area of new development (BU-23) is located approximately 8 km upstream from Dog Creek PD70790. Porcupine Creek PD71109 is adjacent to the proposed new development in this basin.

Dog Creek, SB 3, Quinn Creek has a total watershed basin area of 856 ha and is classified as a Class 3 watershed in accordance with the KBLUP-implementation strategy. BU-23 development is proposed adjacent to Porcupine Creek PD71109.

Dog Creek Sub-basin 3 Report Card

Road Density	1.21 km/km2
Number of Stream Crossings	7 (no change)
Roads on unstable slopes	.03 km/km2 (no change)

Dog Creek, Porcupine Creek- Unified SB 4, 5 and 6 has a total watershed basin area of 2172 ha and is classified as a Class 3 watershed in accordance with the KBLUP-implementation strategy. BU-23 development is proposed adjacent to Porcupine Creek PD71109.

Dog Creek –Porcupine Creek-Unified Sub-basin 4,5,6 Report Card

Road Density (2.26km+0.95km+0.75km+0.05km)	4.01 km/km2 (increase of 1km/km2)
Number of Stream Crossings (add 1 crossing in SB4)	19 (increase by one crossing)
Roads on unstable slopes	0 km/km2 (no change)

ECA Management Strategies:
BCTS has retained the services of a registered professional to complete ECAs snapshots for the domestic watersheds (DWS) in which BCTS has proposed new development. The District Guidance for DWS indicates an ECA limit of 30% as a "strategy" for managing DWS equivalent cut areas.

BCTS concurs with this as a general strategy. However, where forest health requires prompt harvest of stands, an ECA limit of 30% is often not attainable and therefore other strategies to reduce the potential for an adverse impact on a DWS must be proposed. If harvest is predicated on the need to remove timber immediately because of the potential for economic loss of value, then alternative strategies must be considered.

The reason BCTS is willing to accept a higher ECA and propose alternative strategies is because the loss of the hydrologic function of the forest cover (to the ECA which we have calculated as proposed) will happen regardless in relatively homogeneous stands under attack by forest health agents.

BCTS provides alternative strategies for different DWS and/or sub-basins and we are confident of these strategies for managing the DWS where a higher ECA is projected.

Amendment # 15 Part 1

McCormick Creek – Limpid Map Sheet

- See appendix P for summary reports by domestic watershed. This report outlines several recommendations to address this increase in ECA. This report will serve to guide BCTS operations under this amendment.
- Gross area of proposed LI-14 is indicated as 20.1 ha.
- Net area will be less than 20.1 ha and the final ECA is projected to be less than the projected 46.8%.
- No new roads are proposed for Li-14.
- Any bladed or excavated trails required will be rehabilitated in a timely fashion ensuring natural drainage is re-established
- The existing crossing of McCormick creek has been problematic over the years; BCTS intends to mitigate the past failures through road works at the crossing.
- A TSFA was completed for an adjacent block (A77097 block 1). This TSFA will serve to guide development in the McCormick Creek basin.

Amendment # 15 Part 2

Bull Dog –Dog Creek

- A report outlining several recommendations to address this increase in ECA has been prepared by a registered professional and will serve to guide BCTS operations under this amendment.
- Block BU-23 is a large patch of Pl which, when the ECA is estimated, will increase the proposed ECA to high levels at the sub-basin level, but is not anticipated to increase the ECA over the entire drainage much above 15 %.
- The block is a mixture of conventional and cable ground (moderate slopes to slopes requiring cable harvesting).
- The calculated ECA has likely underestimated the height and therefore the hydrological recovery of existing harvested areas, because of our conservative approach to ECA calculations. BCTS will recci the adjacent plantations when development is planned for this unit and re-calculate the proposed ECA as required.
- The relatively homogeneous Pl block will have non-Pl species maintained to the extent they provide a hydrologic reduction in ECA (patches as proposed to single trees); single trees maybe left to meet stand level biodiversity.
- Prescriptions for riparian management zones (rmz) will consider the projected high ECA and rmzs will be prescribed (to the extent practicable) to mitigate the potential for any stream to channel water.
- BCTS will carry out full rehabilitation by restoring natural drainage on in block roads that have no long term requirement; this will re-establish intercepted sub-surface water and reduce the channelling of ditch water.

Section 3.6 Measures to Protect Forest Resources: Wildlife

Section 3.6.3 Objectives for Known Ungulate Winter Range

Amendment 15 Part 2

New and refined Ungulate Winter Range guidelines and areas have become available for the Arrow Boundary Forest District. BCTS considers this to be the best information available to manage ungulates. The new objectives for Ungulate Winter Ranges have been set by the *Forest and Range Practices Act, Forest Planning and Practices Regulation,* Section 7(2) - Notice – Indicators of the amount, distribution and attributes of wildlife habitat required for the winter survival of ungulate species in the Arrow TSA, including Woodlots. The notice includes updated winter range boundaries. There are also a set of UWR guidelines and map linework named 'Ungulate Winter Range Objective – Ministry of Water, Land and Air Protection (WLAP) Kootenay Region – West', that are expected to replace the Section 7 notices, under the *Forest and Range Practices Act, Government Action Regulation,* Sec. 12(1) and 9(2). This set of information is known as the Draft GAR Guidelines.

BC Timber Sales has received permission (as per January 10, 2005 letter of W. Stetski, Regional Manager, WALP) to adopt the Draft GAR guidelines and updated map linework in anticipation of this information being approved.

Consequently, BC Timber Sales has replaced the KBLUP-IS UWR linework on the FDP maps with the new Draft GAR linework and proposed development has been analyzed using the Draft GAR guidelines.

The following table shows the UWR management units that are impacted by proposed development in Amendment #15. Part 1

Mapsheet	UWR Management Unit	Amendment #15 Blocks
Limpid Creek	0326-MD	Li-15

The following tables show the amounts of UWR pre and post Amendment #15. The new guidelines measure UWR by three criteria, percent snow interception cover (SIC), percent of area in early seral stages (<21 yrs) and percent of area in mature/old forest stands.

Draft: Management Unit 0326 – Mule Deer

Predominate BEC for 326 is ICHxw Includes Am#11in Pre-Amendment #15	Gross SIC Area (ha)	Net SIC Area (ha)	SIC (%)	Gross Young Forage Area (ha)	Net Young Forage Area (ha)	Young Forage (<21yrs) (%)	Gross Old Forage Area (ha)	Net Old Forage Area (ha)	Old Forage Cover (>80yrs) (%)
Pre Amend 15	759.83	449.66	59.2	759.83	58.19	7.7	211.26	110.65	52.4
Post Amend 15	759.83	446.66	58.8	759.83	62.2	8.2	211.26	106.2	50.3
Target (%)	-	-	>20	-	-	<40	-	-	>10

Management unit 326 meets the target amount of SIC and there is a surplus. The amount of area in young seral stages is under the maximum of 40% and the amount of area in old forest stands is over the minimum of 10%. All three UWR criteria have been met for this management unit.

3.8 Visual Landscape Management

Section 3.8.1 Strategies for Visual Landscape Resource Management

Any harvesting of timber in a visually sensitive area will require appropriate design of harvesting units to reflect:

1. the nature of shapes found in the landscape and
2. the extent to which forest health factors* influence the best visual design given operational and merchantability constraints.

Where natural openings exist, these will guide the size and shape of visible portions of proposed clearcuts given forest health factors which will influence the nature and extent of this design principle.

Forest Health Factors: This amendment contains proposed cutblocks designed to address Mountain Pine Beetle, Douglas Fir Beetle and/or Fir Engraver Beetle infestations in BC Timber Sales operating areas.of Limpid and Dog Creek. As a result, the ability to use the same species that is being infested to mitigate the visual impact of the block will be limited. Blocks are consequently larger than would be expected with normal, non-forest health related amendments. Although cutblock shapes are being designed given infestation occurrence, operability and merchantability, portions of green timber- not otherwise infested, may be required to be harvested in order for development to proceed following the principles of good visual design.

In some situations, the visual quality objective may not be met due to the forest health condition requiring more timber to be removed than what would normally be removed in order to balance the need to address the forest health condition and achieve the VQO objective.

In the Plan, BC Timber Sales committed to managing visuals within scenic areas to the recommended Visual Quality Objectives. BC Timber Sales is finding that harvesting to address forest health conditions may result in not meeting the recommended Visual Quality Objectives in the short term (up to free to grow). In the longer term, Visual Quality Objectives will be met through the use of visual design techniques including design and leave areas given the right species mix and our Visual Impact Assessments will provide the rationale and clarity as to the objective BCTS will manage for in the short term.

3.10 Range

3.10.1 Issues

Range tenure referrals were addressed by identifying irrigation licenses from the Land and Water BC web-site and sending notice letters to those addresses. Any response from range holders or trappers will be incorporated into the final submission of Part 1 of 2 or Part 2 of 2.

Measures to Manage and Protect

Range units are recognized as having high values for the grazing of domestic cattle and wildlife. These needs will be integrated into site plans as much as operationally feasible.

4.0 Harvesting Section – Harvest Summary Table

For proposed development areas where terrain stability field assessments, flat over steep assessments, or soil erosion field assessments are required, planned developments will be consistent with the results and recommendations. For proposed development areas in the Harvest Summary Table (Appendix A) where terrain stability assessments are shown as completed, the development will be consistent with the results and recommendations of these reports.

5.0 Access Management-Road Construction, Modification and Assessment Table

For proposed roads where terrain stability field assessments, flat over steep assessments, or soil erosion field assessments are required, planned developments will be consistent with the results and recommendations of these assessments. For proposed roads to be used to access proposed development in the Road Construction, Modification, and Assessment Table (Appendix B) where terrain stability assessments are shown as completed; the development will be consistent with the results and recommendations of these reports.

6.0 Forest Practises Variances

BC Timber Sales proposes the following variances as identified in Appendix J that include variances in accordance with Section 11(3) of the Operation and Site Planning Regulation and Section 6(2)(g) of the Timber Harvesting and Silviculture Practises Regulation.

7.0 Advertisements

BCTS' Amendment # 15 for the Arrow Boundary Forest District will be advertised on the Ministry of Forests - Official Notices Website and local newspapers including the Castlegar News and the Trail Daily Times.

The Amendment will include 2 parts- Part 1 is has an approved 30 day review and comment period, and Part 2 is a 60 day review and comment period. When the 30 day review and comment period for Part 1 closes, Part 1 will be extracted from the initial submission, and built into a Final Submission- Part 1 of 2 and then submitted to the District Manager for approval. When the 60 day review and comment period for Part 2 of Amendment 15 closes, Part 2 will be extracted from the initial submission, and built into a Final Submission- Part 2 of 2, and then submitted to the District Manager for approval.

Copies of the legal advertisements will be located in Appendix K with the final submission of the applicable parts of this amendment.

8.0 Review and Comment/Documentation and Referrals

Referral letters, along with an accompanying suitable scale map (where required) have been sent to those individuals and organizations identified in Appendix L. Comments received during the advertised review and comment period for the applicable part of the amendment will be incorporated into that part of the final submission sent to the District Manager for approval.

9.0 Summary of Changes

Based on the comments received during the Review and Comment period , changes will be made to the respective parts of Amendment #15. A Summary of Changes will be presented in Appendix M of the applicable part of this amendment.

10.0 Maps:

Updated copies of the following maps are included with this document. These mapsheets have been updated to show new proposed development and to update the status of existing openings within BC Timber Sales operating areas.

Mapsheets: Bull Dog and Limpid

I certify that I have reviewed this document and, while I did not personally supervise all the work described, I have determined that this work has been done to standards expected of a member of the Association of BC Forest Professionals.

Certified by (RPF):
BCTS Planning Forester

Date: ______________

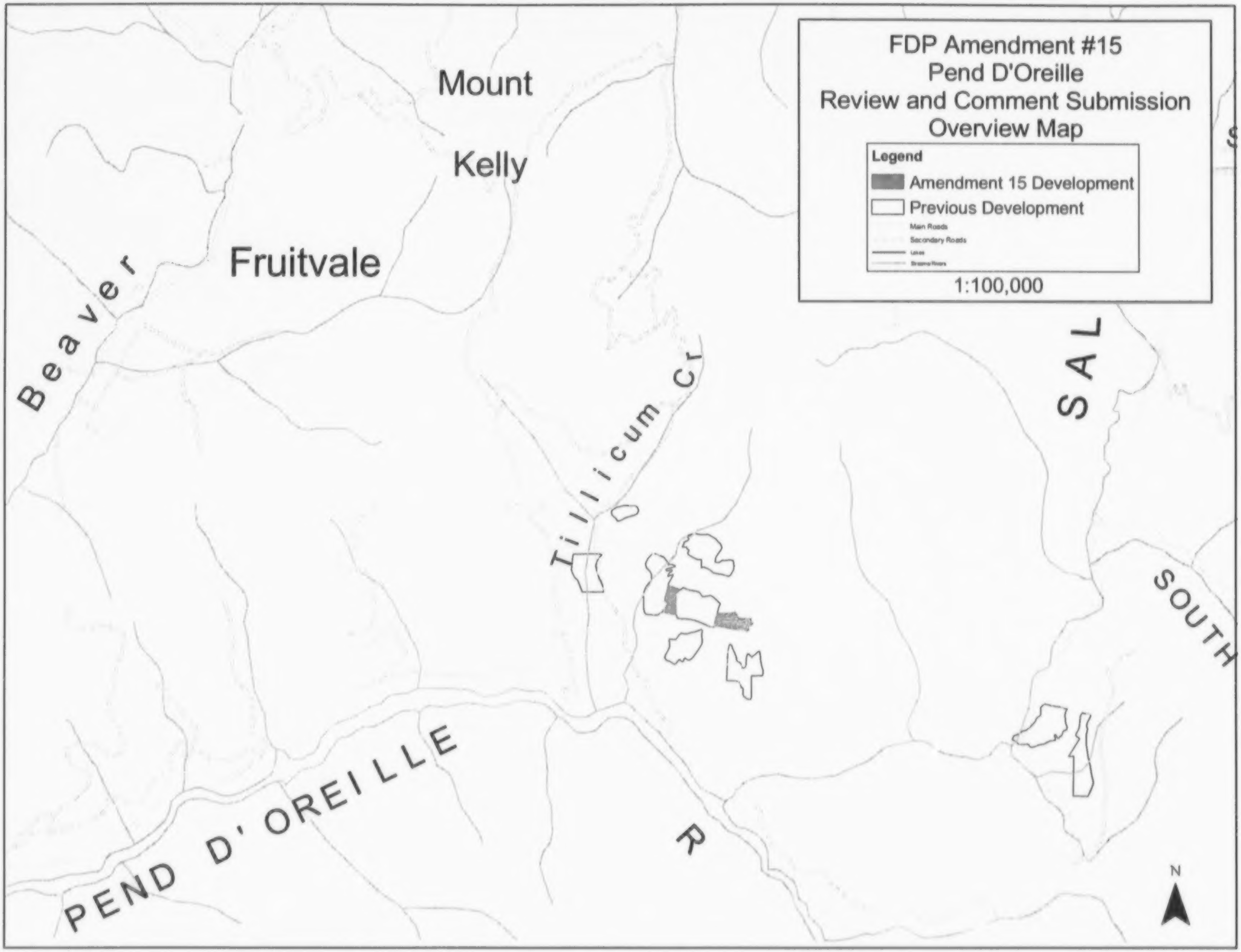
BCTS Forester (RPF)
Acknowledgement:

Date: ______________

Approved By:
Section 41(1) of the FPC of BC Act

District Manager
Or Authorized Person

Date:



FDP Amendment #15
Pend D'Oreille
Review and Comment Submission
Overview Map

Legend
▨ Amendment 15 Development
☐ Previous Development
Main Roads
Secondary Roads
Lakes
Streams/Rivers
1:100,000
Mount
Kelly
Fruitvale
Beaver
Tillicum Cr
SAL
SOUTH
PEND D' OREILLE
R
N

October 3rd, 2005
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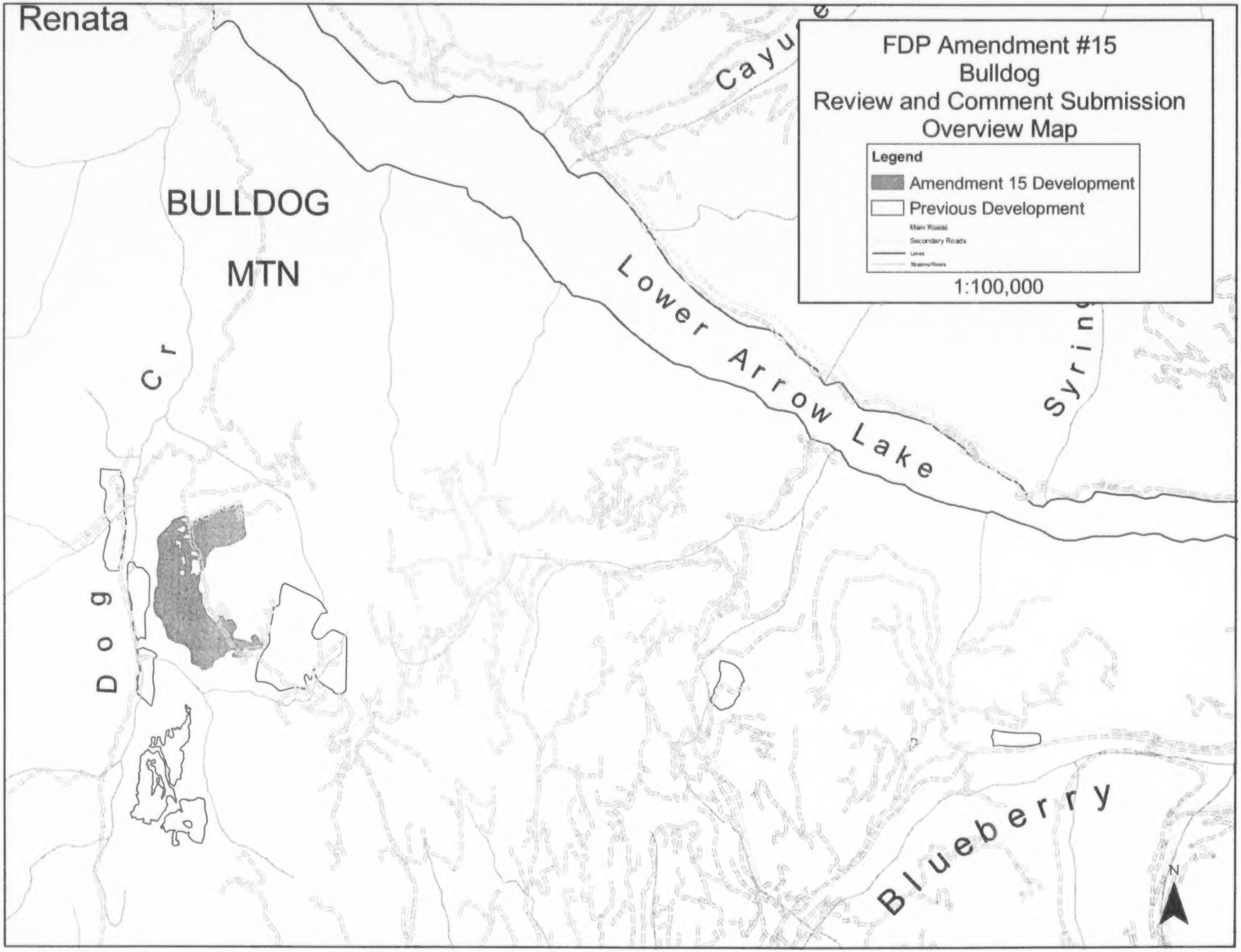
FDP Amendment #15
Bulldog
Review and Comment Submission
Overview Map
Legend
Amendment 15 Development
Previous Development
Main Roads
Secondary Roads
Lakes
Streams/Rivers
1:100,000
Renata
BULLDOG
MTN
Dog Cr
Cayuse
Lower Arrow Lake
Syringa
Blueberry
N

October 3rd, 2005
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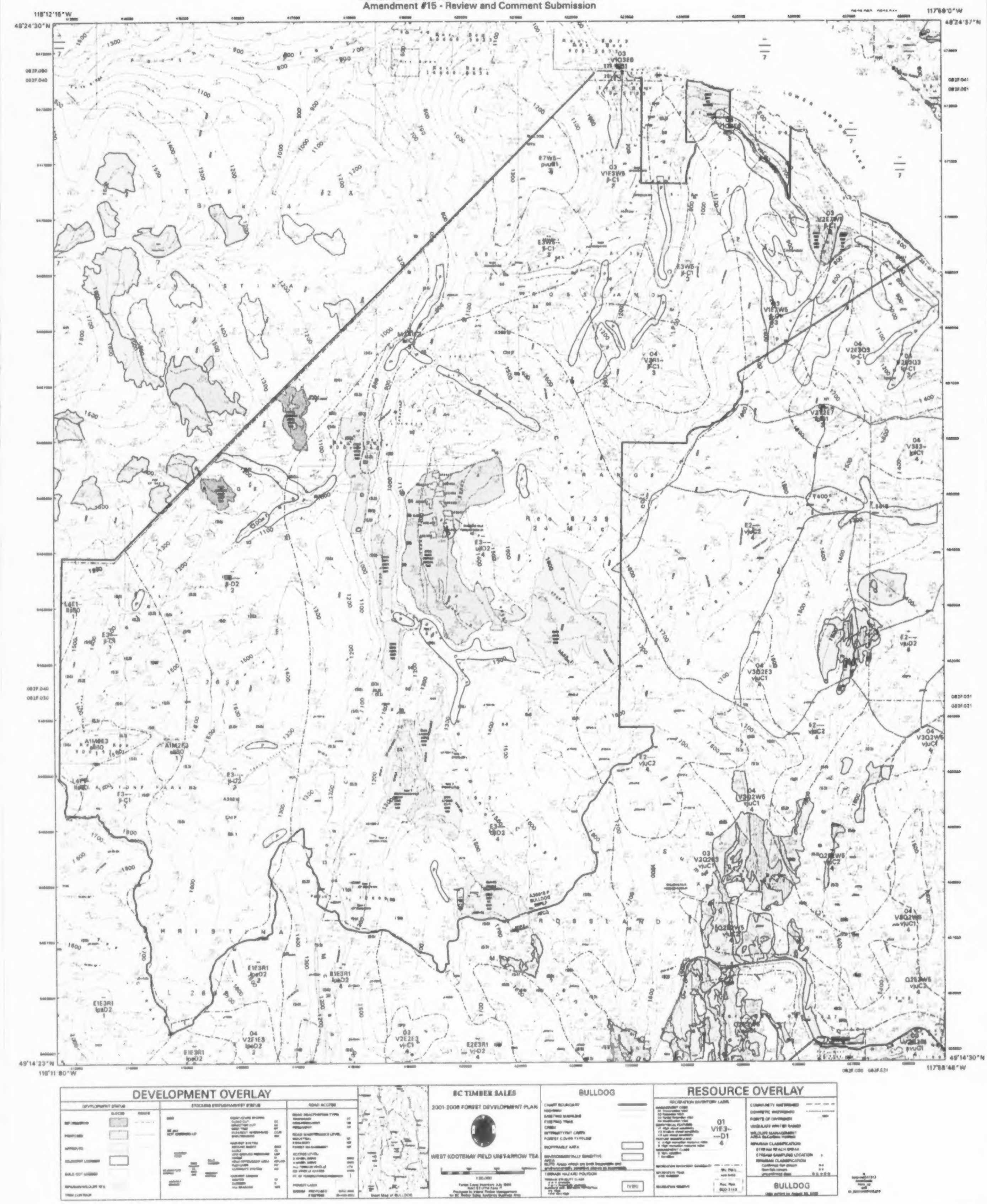
BC Timber Sales 2001-2006 FDP-ARROW TSA/TFL 23
Amendment #15 - Review and Comment Submission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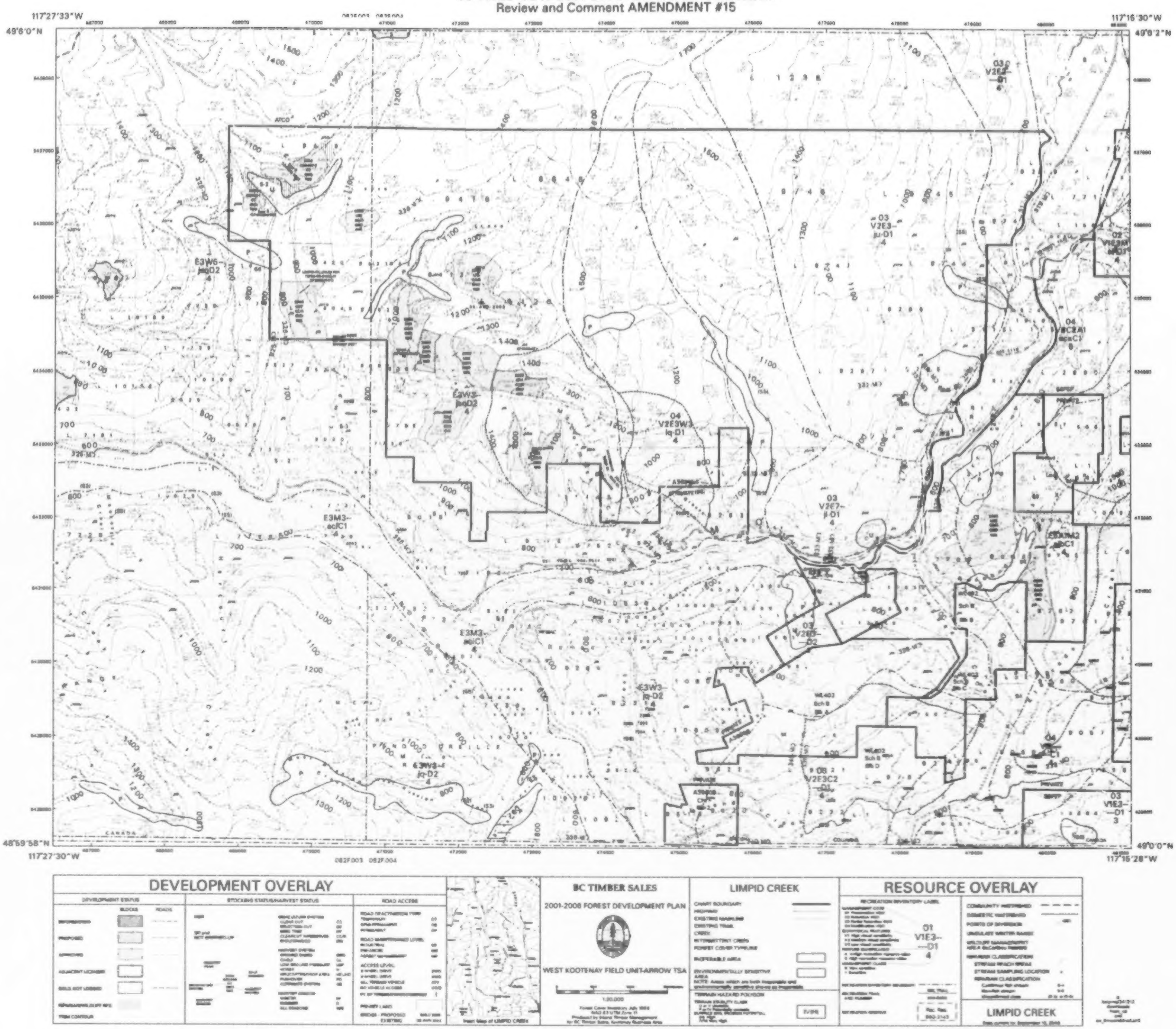
49°24'30"N
117°58'0"W
49°24'37"N
49°14'23"N
118°11'60"W
49°14'30"N
117°58'48"W
LOWER ARROW LAKE
DEVELOPMENT OVERLAY
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
WEST KOOTENAY FIELD UNIT-ARROW TSA
1:20,000
BULLDOG
RESOURCE OVERLAY
01
V1E3-
--D1
4
BULLDOG

BC Timber Sales 2001-2006 FDP-ARROW TSA/TFL 23
Review and Comment AMENDMENT #15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117°15'28"W
082F.003 082F.004
ATCO
E3W6-
jaqD2
4
E3M3-
ecjC1
4
E3W3-
jaqD2
4
04
V2E3W3
lq-D1
4
03
V2E7-
jl-D1
4
03
V2E3-
jl-D1
4
03
V2E3-
D1
04
BCE4I
ecsC1
6
E3W3-
lq-D2
4
E3W8-
lq-D2
4
03
V2E3-
D2
E3M2
ebC1
03
V2E3C2
D1
4
03
V1E3-
D1
3
A30685
PRIVATE
CANADA
COLUMBIA
DEVELOPMENT OVERLAY
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
WEST KOOTENAY FIELD UNIT-ARROW TSA
1:20,000
LIMPID CREEK
RESOURCE OVERLAY
01
V1E3-
D1
4
Rec. Res.
LIMPID CREEK

Appendix J

Variance that is requested for all blocks listed below is:
FPC Act, Operational Site Planning Regulation, Section 11(3)(b)(i)(A) and
FPC Act, Timber Harvesting and Silviculture Practises Regulation, Section 6(2)(g)

Map Sheet	TSL	Blocks	Rationale
			Amendment 15 Part 1 of 2
Limpid	Li-14	1	This 20.1 ha block is proposed for harvest and is greater than 40 ha when combined with adjacent areas (LI-09, gross approved area of 48.0 ha, and Li-08, gross approved area of 50.4 ha, Amendment # 11). A patch size analysis has not been completed as this harvesting is proposed for the control and salvage of bark beetles. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural characteristics of the proposed block's stand level retention will be achieved through the use of the following (where available): retain non-pine, non-grand fir species, deciduous species, grade 6 species where appropriate, retain dominant or co-dominate Douglas Fir ; utilize WTPs; design temporary reserves where possible, and implement other reserves (ie: single trees) where available and operationally possible (considering access requirements and safe logging operations). This proposed block is not adjacent to an existing opening with silviculture obligations (except as noted above). The block area was identified as containing gray, red and green attacked grand fir trees based on a walkthrough by BCTS field team staff. In addition, Atco Lumber's areas which border BCTS' charts are also indicating beetle activity.
Limpid	Li-15	1	This 12.5 ha block is proposed for harvest and is greater than 40 ha when combined with adjacent areas (LI-09, gross approved area of 48.0 ha, Amendment # 11). A patch size analysis has not been completed as this harvesting is proposed for the control and salvage of bark beetles. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural characteristics of the proposed block's stand level retention will be achieved through the use of the following (where available): retain non-pine, non-grand fir species, deciduous species, grade 6 species where appropriate, retain dominant or co-dominate Douglas Fir ; utilize WTPs; design temporary reserves where possible, and implement other reserves (ie: single trees) where available and operationally possible

			(considering access requirements and safe logging operations). This proposed block is not adjacent to an existing opening with silviculture obligations (except as noted above). The block area was identified as containing gray, red and green attacked grand fir trees based on a walkthrough by BCTS field team staff. In addition, Atco Lumber's areas which border BCTS' charts are also indicating beetle activity.
			Amendment 15 Part 2 of 2
Dog Creek	BU-23	1	This 345 ha block is proposed for harvest and is greater than 40 ha. This large patch is adjacent to openings 82E040-051, 53, and 60 (generally, all SR <2.5 m) and TSLs A62447 through to A62458- all Category A-proposed. A patch size analysis has not been completed as this harvesting is proposed for the control and salvage of bark beetles. Refer to the Forest Health Rationale Table in Appendix O for specific details. Structural characteristics of the proposed block's stand level retention will be achieved through the use of the following (where available, and subject to total chance, second pass opportunities in non-pine timber types): retain non-pine species, deciduous species, grade 6 species where appropriate, retain dominant or co-dominate Douglas Fir, Larch and other species as considered appropriate ; utilize WTPs; design temporary reserves where possible, and implement other reserves (ie: single trees) where available and operationally possible (considering access requirements and safe logging operations). This proposed block is adjacent to existing opening with silviculture obligations (as noted above). The block area was identified as containing gray, red and green attacked lodgepole pine trees based on a walkthrough by BCTS field team staff in 2004-2005, a beetle probe survey done in 2004, and the stand was rated as having a moderate to severe susceptibility rating based on BCTS' Pine Management Priority Report, completed March 2005. In addition, P+T's areas which border BCTS' charts are also indicating heavy beetle activity.

Appendix A - HARVEST SUMMARY TABLE

Amendment 15	Part 2	Part 1	Part 1	
TSL-Blk or Map ID and Unit#	**BU 23**	**Li-14**	**Li-15**	**HARVEST SUMMARY TABLE LEGEND**
Composite Map Name	Bulldog	Limpid	Limpid	Refers to the Operating Area covered by the 1:20 000 Forest Development Plan maps
Map Reference	82E040-041	82F004	82F004	Refers to 1:20 000 Forest Cover Mapsheet
Geographic Location	Quinn-Porcupine Ck	Limpid Ck	Limpid Ck	Refers to the local geographic name
Lat. / Long.	49° 20' / 118° 06'	434000N 472000E	434000N 472000E	Latitude / Longitude (block location)
Anticipated Sale Date	2005	2005	2005	The year that a Timber Sale is expected to be sold
Gross Area (ha)	345	20.1	12.5	Total block area in ha
Wildlife Tree Patches (%)	8	7	7	The area that will be left unharvested for wildlife trees
Other Reserves (ha)	0	0	0	The area to be left unharvested for biodiversity or other reasons
Net Area to Reforest (ha)	317	18.7	11.6	The area that will be reforested upon completion of harvesting
Total Harvest Volume (m3)	87000	5600	3000	The volume of timber expected to be harvested
Silviculture System	CC/ Res/Sc	CC/ Res	CC/ Res	Select=Selective or Partial-cut Harvesting, Clearcut/res.=Clearcut with reserves, PO=Pushover/Pop-up Harvesting
Harvest Method	Ground/Cable	Ground	Ground	Gnd = Ground Based, LPG = Low Ground Pressure Equipment, Heli = Helicopter, Cable = Skyline/HighLead Overhead Cable Systems
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer	W = harvest on a snowpack, S = harvesting in dry conditions
Landscape Unit	N509	N504	N504	Landscape Unit number from higher level plans
Mapped BEC	ICHdw-ICHmw2	ICHdw/ICHmw2	ICHdw/ICHmw2	Biogeoclimatic Ecosystem Classification
Natural Disturbance Type	2-3	2-3	2-3	Natural Disturbance Type from the Biodiverstiy Guidebook
Biodiversity Emphasis	Low	Intermediate	Intermediate	Biodiversity Emphasis Option from the Kootenay-Boundary Land Use Plan
Resource Management Zone	Intermediate	Integrated	Intergrated	Resource Management Zone identified in the Kootenay-Boundary Land Use Plan
Watershed Name	Dog Creek	McCormick Creek	N/A	The name of the licenced watershed
Watershed Class	3	2	N/A	Community Watershed, or 1=a face unit domestic watershed, 2=a domestic watershed<500ha, 3=a domestic watershed>500ha
Proposed ECA %	15.6% (total basin)	46.80%	N/A	Equivalent Clearcut Area % calculated in accordance with Watershed Assessment Procedure Guidebook
Riparian Classifications	(S3)	S-3	S-3	Classification of streams in accordance with the Riparian Management Area
Wildlife Habitat Status	NKW	NKW	UWR	GWM = General Wildlife Measures, UWR = Ungulate Winter Range, Caribou = Caribou
Available Old (ha)	See woodfinder	See woodfinder	See woodfinder	The area of Old Forest that is available for harvest in accordance with Seral Tables
Available Old/Mature (ha)	See woodfinder	See woodfinder	See woodfinder	In Previous Plan = the block was approved in a previous development plan and the area deducted from the available mature and old at that time
Forest Cover Label	PL leading types, 420-430	BGFdi(Lw, Plli) 430	Fdi(At) 430	The label on the Forest Cover Map and used in the calculations to produce the Seral Tables
Green-up of adjacent Block	SR	adjacent to Li-09	adjacent to Li-08+09	N/A = not adjacent or the adjacent area is greened-up, SR = adjacent block is stocked but not greened-up, NSR = adjacent block is not stocked
Detailed Terrain Analysis	N/A	N/A	N/A	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Flat Over Steep Analysis	Required	N/A	N/A	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Soil Erosion Field Assessment	N/A	N/A	N/A	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Visual Impact Assessment	N/A	Required (confirm)	N/A	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Archaeological Assessment	Required	N/A	Required	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Avalanch Analysis	N/A	N/A	N/A	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Pest Incidence Survey	N/A	N/A	N/A	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Current Category Status	Proposed Cat A	Proposed Cat A	Proposed Cat A	Approved = Approved in a previous plan, Proposed = newly proposed for approval, Information = information and may be proposed in a future plan
Joint Approval Required?	N/A	N/A	N/A	Yes = block that requires approval of a Designated Environment Official as well as the District Manager
Change From Last Plan?	Yes	Yes	Yes	No = a block that has no changes from the last FDP

AOA base map refered to was the 2000 Nova Timberline Geomatics product.

For Li-14, the indicated VIA may not be required- confirm with field reconnaisance prior to finalizing site plan.

NOTE: Prior to final signoff of Site Plan, the Prescriber should confirm any updates to the assessment table.

Appendix A - HARVEST SUMMARY TABLE

Amendment 15													
TSL-Blk or Map ID and Unit#	**LI-05**	**LI-06**	**LI-7**	**LI-8**	**LI-9**	**LI-10**	**LI-11**	**LI-12**	**LI-13**	**BU-9**	**BU-10**	**BU-11**	**BU-12**
Composite Map Name	Limpid	Limpid	Limpid	Limpid	Limpid	Limpid	Limpid	Limpid	Limpid	Bulldog	Bulldog	Bulldog	Bulldog
Map Reference	82F003	82F003	82F003	82F004	82F004	82F004	82F004	82F003	82F004	82E040	82E040	82E040	82E040
Geographic Location	Rosebud Lk	Rosebud Lk	Limpid Ck	Limpid Ck	Limpid Ck	Limpid Ck	McCormick Ck	Limpid Ck	Limpid Ck	Peter Creek	Porcupine Ck	Porcupine Ck	Porcupine Ck
Lat. / Long.	49° 2' / 117° 17'	49° 1' / 117° 16'	49° 3' / 117° 24'	49° 3' / 117° 23'	49° 3' / 117° 22'	49° 3' / 117° 23'	49° 2' / 117° 22'	49° 4' / 117° 24'	49° 4' / 117° 22'	49° 20' / 118° 7'	49° 18' / 118° 4'	49° 19' / 118° 7'	49° 18' / 118° 7'
Anticipated Sale Date	2005	2005	2005	2005	2005	2005	2005	2005	2005	2005	2005	2005	2005
Gross Area (ha)	53	47	38.3	50.4	48	33	45	12	47	77	258	50	33
Wildlife Tree Patches (%)	5	5	7	5	7	7	5	7	7	4	8	4	8
Other Reserves (ha)	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Area to Reforest (ha)	50.4	44.7	35.6	47.9	44.6	30.7	38	11.2	43.7	73.9	237.3	48	30.4
Total Harvest Volume (m3)	13250	11750	10500	10500	13500	8700	10000	3600	14100	14600	56025	10350	5625
Silviculture System	CC/ Res	CC/ Res	CC/ Res	CC/ Res	CC/ Res	CC/ Res	CC/ Res	CC	CC/ Res	CC/ Res	CC/ Res	CC/Res	CC/Res
Harvest Method	Ground/Cable	Ground/Cable	Ground	Ground/Cable	Ground/Cable	Ground/Cable	Ground/Cable	Ground	Ground/Cable	Ground	Ground	Ground	Ground
Harvest Season	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer	Winter/Summer
Landscape Unit	N504	N504	N504	N504	N504	N504	N504	N504	N504	N509	N509	N509	N509
Mapped BEC	ICHdw	ICHdw	ICHdw/ICHxw	ICHdw	ICHdw/ICHmw2	ICHdw/ICHmw2	ICHdw/ICHmw2	ICHdw	ICHdw/ICHmw2	ICHdw	EssFwc1/ESSFwc4/ICHmw2	ICHdw	ICHdw
Natural Disturbance Type	3	3	3 / 4	3 / 4	2 / 3	2 / 3	2 / 3	3	2 / 3	3	2	3	3
Biodiversity Emphasis	Med	Med	Med	Med	Med	Med	Med	Med	Med	Med	Med	Med	Med
Resource Management Zone	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated
Watershed Name	N/A	N/A	N/A	N/A	N/A	N/A	McCormick	N/A	N/A	Dog Creek SB 1	Dog Creek SB 5	Dog Creek SB 1	Dog Creek SB 4
Watershed Class	N/A	N/A	N/A	N/A	N/A	N/A	Domestic 3	N/A	N/A	Domestic 3s	Domestic 3s	Domestic 3s	Domestic 3s
Proposed ECA %	N/A	N/A	N/A	N/A	N/A	N/A	37.90%	N/A	N/A	9.90%	57.90%	9.90%	22.60%
Riparian Classifications	N/A	N/A	N/A	N/A	N/A	N/A	S-3	N/A	N/A	S3	S5	S3	S3
Wildlife Habitat Status	UWR	UWR	UWR	UWR	GWM	UWR	UWR	GWM	GWM	GWM	GWM	GWM	GWM
Available Old (ha)	-25.5	-25.5	25.5 / 0	-25.5	-25.5 / 653.5	-25.5 / 653.5	-25.5 / 653.5	-25.5	-25.5 / 653.5	N/A	N/A	N/A	N/A
Available Old/Mature (ha)	709.1	709.1	709.1 / 166.7	709.1	709.1 / 0.0	709.1 / 0.0	709.1 / 0.0	709.1	709.1 / 0.0	N/A	N/A	N/A	N/A
Forest Cover Label	Polygon 1319 Pli(Lw) 5416-23	Polygon 700 PliLw 3306-24	Polygon 337 FdiBg(PliCwHw) 6404-21	Polygon 336 FdiBg(LwAt) 5404 21	Polygon 449 Fdi(Lw) 4306-21	Polygon 453 Fdi(LwPliCwHw) 8414-18	Polygon 560 Fdi(LwAt) 5309-19	Polygon 279 Pli(FdiBgLw) 5305-20	Polygon 235 Pli(Lw) 5307-21	Polygon 226 Lw(PliSeFdi) 4306 19	Polygon 352 PliLw(Fdi) 4305-24	Polygon 284 PliLw(Fd) 4306-22	Polygon 402 Pli(Lw) 4306-21
Green-up of adjacent Block	N/A	N/A	N/A	SR	N/A	N/A	SR	N/A	SR	N/A	SR/FTG	N/A	N/A
Detailed Terrain Analysis	Req'd	Req'd	N/A	N/A	N/A	N/A	DONE	N/A	N/A	N/A	Req'd	Req'd	Req'd
Flat Over Steep Analysis	Req'd	Req'd	N/A	Req'd	N/A	N/A	N/A	N/A	Req'd	N/A	Req'd	Req'd	N/A
Soil Erosion Field Assessment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Visual Impact Assessment	Req'd	N/A	N/A	N/A	N/A	N/A	DONE	N/A	N/A	N/A	N/A	N/A	N/A
Archaeological Assessment	Req'd	Req'd	DONE	Req'd	N/A	N/A	DONE	N/A	N/A	Req'd	Req'd	Req'd	Req'd
Avalanch Analysis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pest Incidence Survey	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Current Category Status	Cat A-approved	Cat A-approved	Cat A-approved	Cat A-approved	Cat A-approved	Cat A-approved	Cat A-approved	Cat A-approved	Cat A-approved	Cat A-approved	Cat A-approved	Cat A-approved	Cat A-approved
Joint Approval Required?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Change From Last Plan?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

AOA base map refered to was the

For Li-14, the indicated VIA may nc

Appendix A - HARVEST SUMMARY TABLE

Amendment 15		
TSL-Blk or Map ID and Unit#	**A72329**	**HARVEST SUMMARY TABLE LEGEND**
Composite Map Name	Bulldog	Refers to the Operating Area covered by the 1:20 000 Forest Development Plan maps
Map Reference	82E030/40	Refers to 1:20 000 Forest Cover Mapsheet
Geographic Location	Porcupine Ck	Refers to the local geographic name
Lat. / Long.	49° 17' / 118° 6'	Latitude / Longitude (block location)
Anticipated Sale Date	2005	The year that a Timber Sale is expected to be sold
Gross Area (ha)	203.5	Total block area in ha
Wildlife Tree Patches (%)	8	The area that will be left unharvested for wildlife trees
Other Reserves (ha)	0	The area to be left unharvested for biodiversity or other reasons
Net Area to Reforest (ha)	170.6	The area that will be reforested upon completion of harvesting
Total Harvest Volume (m3)	51000	The volume of timber expected to be harvested
Silviculture System	CC/ Res	Select=Selective or Partial-cut Harvesting, Clearcut/res.=Clearcut with reserves, PO=Pushover/Pop-up Harvesting
Harvest Method	Ground	Gnd = Ground Based, LPG = Low Ground Pressure Equipment, Heli = Helicopter, Cable = Skyline/HighLead Overhead Cable Systems
Harvest Season	Winter/Summer	W = harvest on a snowpack, S = harvesting in dry conditions
Landscape Unit	N509	Landscape Unit number from higher level plans
Mapped BEC	ICHmw2/ESSFwc1	Biogeoclimatic Ecosystem Classification
Natural Disturbance Type	2	Natural Disturbance Type from the Biodiverstiy Guidebook
Biodiversity Emphasis	Med	Biodiversity Emphasis Option from the Kootenay-Boundary Land Use Plan
Resource Management Zone	Integrated	Resource Management Zone identified in the Kootenay-Boundary Land Use Plan
Watershed Name	Dog Creek SB 4	The name of the licenced watershed
Watershed Class	Domestic 3s	Community Watershed, or 1=a face unit domestic watershed, 2=a domestic watershed<500ha, 3=a domestic watershed>500ha
Proposed ECA %	22.60%	Equivalent Clearcut Area % calculated in accordance with Watershed Assessment Procedure Guidebook
Riparian Classifications	S-5	Classification of streams in accordance with the Riparian Management Area
Wildlife Habitat Status	GWM	GWM = General Wildlife Measures, UWR = Ungulate Winter Range, Caribou = Caribou
Available Old (ha)	N/A	The area of Old Forest that is available for harvest in accordance with Seral Tables
Available Old/Mature (ha)	N/A	In Previous Plan = the block was approved in a previous development plan and the area deducted from the available mature and old at that time
Forest Cover Label	Polygon 80 Pli(FdiLw) 4304-20	The label on the Forest Cover Map and used in the calculations to produce the Seral Tables
Green-up of adjacent Block	SR	N/A = not adjacent or the adjacent area is greened-up, SR = adjacent block is stocked but not greened-up, NSR = adjacent block is not stocked
Detailed Terrain Analysis	N/A	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Flat Over Steep Analysis	N/A	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Soil Erosion Field Assessment	N/A	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Visual Impact Assessment	N/A	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Archaeological Assessment	Done	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Avalanch Analysis	N/A	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Pest Incidence Survey	N/A	N/A = not required, Required = must be completed before the block is sold, Year = year the analysis or assessment was completed
Current Category Status	Cat A-approved	Approved = Approved in a previous plan, Proposed = newly proposed for approval, Information = information and may be proposed in a future plan
Joint Approval Required?	N/A	Yes = block that requires approval of a Designated Environment Official as well as the District Manager
Change From Last Plan?	Yes	No = a block that has no changes from the last FDP

AOA base map refered to was the

For Li-14, the indicated VIA may nc

NOTE: Prior to final signoff of Site Plan, the Prescriber should confirm any updates to the assessment table.

Appendix B - ENGINEERING ACCESS MANAGEMENT TABLE

Amendment #15
Inital Sub. Part 1 + Part 2
Review and Comment Submission

Map Reference	FSR # 11250-30-__, Name or TSL #	Branch / Spur	Prim. Resp.	Type of Road	Length / Location Nearest 0.1km	Current Access Level	Type / Year Works Proposed			Proposed Access Level	Bridges and Culverts over 2,000 mm	Terrain Stability Field Assessment	Archaeological Impact Assessment	Visual Impact Assessment	Surface Soil Erosion Assessment	Stream, Wetland and Lake Riparian Class	Dev. Status	Joint Sign-off / Approval
							C	M	D									
Amendment #15	**Part 1**																	
Limpid	11250-30-7053	Br 01	BCTS	P	6	2wd			2006	DS-4wd	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Amendment #15	**Part 2**																	
Bulldog	BUR01	Spur 1	BCTS	P	3.5	none	2005			DS-4wd	N/A	Req (last 500m)	Required	N/A	N/A	S-6	P	N/A
Bulldog	BUR02	Spur 2	BCTS	P	2.5	none	2005			DS-4wd	N/A	Req (over P poly)	Required	N/A	N/A	S-6	P	N/A
Bulldog	BUR03	Spur 3	BCTS	T	0.4	none	2005		2006	DP	N/A	Req (over P poly)	Required	N/A	N/A	S-6	P	N/A
Bulldog	BUR04	Spur 4	BCTS	T	0.8	none	2005		2006	DP	N/A	N/A	Required	N/A	N/A	S-6	P	N/A

In Limpid Creek- no new roads are planned																	
Planned DS-to address TSFA issues adjacent to Li-11(A77097-Blk 1)																	

Map Ref. No. (BCGS)	Geographic Location	TSL-Blk or Map ID and Unit#	Gross Area (0.1ha)	Vol m3/ha (All Species)	Vol m3 (Pl>12.5cm)	LU	Timber Type	Age	Bark Beetle	Infest. Level %	Green to Red ratio	Survey Type	Survey Date	Suscept and Risk Rating	Other Forest Health Factors	Treatment Schedule	Rationale	
	Amendment 15	Part 1																
82F004	Limpid Creek	Li-14	20.1	300-350m3/ha	Not Available at this time	N504	BgFdi	81-120	IBE IBD	20-50%	Not Available at this time	BCTS field team recci	Fall 2004 Spring 2005	considered high due to adjacent stands infested	DRA	Prompt harvesting in 2005 and slash disposal within one year of harvest completion	The important issue to note here is that this area has an active beetle population. Significant beetle populations are noted in adjacent areas BCTS plans to address the salvagable stands of dead grand fir as well as the areas of detected green attack in a comprehensive manner considering total chance, second pass and to address the susceptible types throughout the area of Li-14. Prompt forest management is required to address the developing infestation in this susceptible type and to reduce the loss in timber values due the Fir Engraver Beetle and other related forest pathogens	Email dated August 22, 2005 from Mike Ferguson summarizing field recci notes on area
82F004	Limpid Creek	Li-15	12.5	300-350m3/ha	Not Available at this time	N504	FdiAt	81-120	IBE IBD	Attack in adjacent stands is high	Not Available at this time	BCTS field team recci	Fall 2004 Spring 2005	considered high due to adjacent stands infested	DRA	Prompt harvesting in 2005 and slash disposal within one year of harvest completion	The important issue to note here is that this area has an active beetle population. Significant beetle populations are noted in adjacent areas BCTS plans to address the salvagable stands of dead grand fir as well as the areas of detected green attack in a comprehensive manner considering total chance, second pass and to address the susceptible types throughout the area of Li-15. Prompt forest management is required to address the developing infestation in this susceptible type and to reduce the loss in timber values due the Fir Engraver Beetle and other related forest pathogens	Email dated September 20, 2005 from Mike Ferguson summarizing field recci notes on area
	Amendment 15	Part 2																
82E040-41	Bull Dog	BU-23	345	250-300m3/ha	Not Available at this time	N500	Pl	81	IBM	40%	0.75 to 1	Nazca Consulting Pixel Survey	Nov 2004 Winter of 2005	Moderate to High	Not Available at this time	Prompt harvesting in 2005 and slash disposal within one year of harvest completion. Pheromone baiting may be employed as a strategy to hold the developing IBM populations in developed harvest units if harvesting is to continue/planned for 2006. Inany case- harvest planned for completion prior to beetle emergance in 2006-2007	Nazca Consulting Pixel Survey completed November of 200 and Pine Managment Priority Report (March 2000S) provide management direction. The 2004 pixel survey indicates a moderate spread potential with low to moderate beetle occurance. The important issue to note here is that this area has an active beetle population. Significant beetle populations are noted in various areas. BCTS plans to address the salvagable stands of dead pine, as well as the areas of detected green attack in a comprehensive manner considering total chance, second pass and to address the susceptible types (pine) throughout the area of BU-23. The Pine Mangement Priority Report provides strategic/tactical direction-identifing ploygon # 5 as a moderate to high susceptible polygon to IBM. Prompt forest management is required to address the developing IBM infestation in the susceptible type	I review of 2004 Nazca Pixel Survey results. I also a review of the Pine Management Priority Report which indicates that Polygon 5 is a moderate to high susceptibility to IBM. I also relied on advise of field techician Mike Ferguson, who has provided an email dated August 22/05 indicating that this unit was field recced. Mike estimates that in areas he has field reviewed, the green to red ratio is closer to 3-4:1. G. Nixon, Sept 2005

HENDERSON
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E-mail: [illegible], www.Henviron.com

September 27, 2005

By electronic mail
Kootenay Timber Sales Office
BC Timber Supply
1907 Ridgewood Road
Nelson, BC
V1L 6K1

Attention: Curt Nixon

Dear Curt:

RE: Hydrologic Management Strategies Associated with Proposed Block BU-23 in the Dog Creek Watershed

As requested, this letter offers hydrologic management strategies for Block BU-23 in the Dog Creek watershed. The block is proposed for harvest in 2006 to address a mainly pine stand, infested or susceptible to the mountain pine beetle. The following material sources were reviewed:

- Equivalent Clearcut Area Calculations -Arrow Forest District- by Timberland Consultants. March 28, 2001. Prepared for SBFEP, Castlegar;
- Excerpt of FDP Amendment #15;
- FDP Major Amendment #11, BC Timber Sales 2001-2006;
- ECA update by G. Portman, Feb.2005;
- Electronic message from C. Nixon, dated 15th September, 2005, and subsequent phone conversations;
- Map: BCTS 2001-2006 FDP-Arrow TSA/TFL 23. Amendment #15,-Review and Comments Submission

This letter is based on an office review of the materials listed above. No fieldwork was carried out.

Block BU-23

The gross harvest area of proposed block BU-23 is 345 ha. The block drains mainly in a residual area direct to Dog Creek (235ha), and partly to Quinn (9.7ha) and Porcupine Creeks[1] (100.3ha), which are two tributaries to the Dog Creek mainstem. A POD licensed for domestic water is located downslope of BU-23.

ECA

The estimated proposed ECA is shown below in Table 1. With BU23, the ECA over the total Dog Creek watershed increases by about 1.7% to 15.6%. This is considered a conservative value: actual ECA is likely lower than shown because some data is from the 2001 Timberland report and doesn't include hydrologic recovery since 2001 in all sub-basins of the watershed. Regardless, over the total watershed, the proposed ECA is not considered a concern for affecting peak flows at the mouth of Dog Creek. Similarly, the proposed ECA increase in the Quinn Creek sub-basin is 16.5%, which is also not a hydrologic concern.

In the Porcupine sub-basin, however, the proposed ECA is above 40% and it is higher than 60% in the East Fork of the Porcupine sub-basin. The ECA will increase by about 4.8% with the harvest of BU-23, split nearly equally between development in the residual area and the East Fork. While the incremental increase in ECA associated with BU-23 should not by itself influence current peak flows, increased peak flows over natural levels are likely because of high pre-existing ECA's in this sub-basin.

Table 1. ECA in Dog Creek watershed associated with BU23

Watershed or (sub)	**Corresponding sub in Timberland (2001) report**	**Area (ha)**	**ECA**			
			Current**		**Proposed (i.e BU23)**	
			ha	**%**	**ha**	**%**
Porcupine (East Fork)	SB5	977	565.5	57.9	23.1	60.2
Porcupine (South Fork)	Portion of SB4	964	223.8	23.2	0	23.2
Total Porcupine*	SB5, SB6, plus portion of SB4.	2172	809.5	37.2	102.1	42.0
Quinn	SB3	856	131.5	15.4	9.7	16.5
Total Dog*	SB1-SB12	19607	2720.3	13.9	345	15.6

* Residual area is included in calculations for Total Porcupine or Total Dog.

** Based on combination of data in Timberland (2001) and Portman (2004).

Roads

Approximately 7.2 km of new road are proposed to access BU-23 (BUR01-BUR04). Almost all of the road length is located within the residual area of Dog Creek, except ~650m of BUR02 which is in the residual area of the Porcupine sub-basin. The roads cross three intermittent creeks. The southern most crossing is of interest because of a downstream POD (~600m distance).

---

[1] The Porcupine Creek sub-basin was drawn from the Timberland (2001) map.

ASSESSMENT AND RECOMMENDATIONS

ECA Management

The pre-existing ECA, plus the additional ECA increase associated with BU-23, represents a localized hazard for peak flows in the Porcupine sub-basin. Several management strategies are listed in Amendment # 11 by the BCTS to mitigate an increasing ECA. These include: 1) reconnaissance of tree heights in adjacent plantations, 2) retaining non-Pl patches, and 3) prescriptions for riparian management zones. Number 2) is the only option that reduces an increase in the ECA. Number 1) will help update the ECA, and Number 3) may be useful for protecting riparian stability. There are several additional techniques for reducing ECA (from: Appendix 2 of the Watershed Assessment Procedure, Anon 1999[2]). In the case of BU-23, the following will also reduce the ECA increase:

- Harvesting less than 80% basal area of the stand;
- Creating small openings less than 1.2ha in size;
- And, harvesting strip cuts <100m width.

Appropriate hydrologic recovery values associated with the above bullets are shown in Anon (1999).

From a hydrologic perspective, and considering that additional harvesting may be required to address forest health issues, it may be more relevant to assess impacts of an ever-increasing ECA. This would entail a field survey to assess hydrologic hazards such as:

- Sedimentation from roads and slopes;
- Channel and riparian stability in the Porcupine sub-basin;
- The POD in the lower reach of the Porcupine Creek sub-basin.

Managing the ECA in relation to identified hazards is an alternate approach to watershed management. The hazard of harvesting can be assessed for different hydrologic categories. In the case of BU-23, for example, a localized high hazard ECA in the Porcupine sub-basin can be assessed against the consequence of increased flows to channel stability, the POD, mouth of Dog Creek or other important resource elements. In this way, appropriate management strategies can be developed. Therefore, it is recommended that:

- A hydrologist field-inspect the potential impacts of the high ECA hazard in the Porcupine sub-basin, especially sedimentation, channel stability and the POD.

Road-Related Hydrologic Hazards

The three crossings in BU-23 are a potential erosion and sedimentation hazard, particularly for BUR02 because the slope drains to potentially unstable terrain along this section of road. Recommendations to manage this hazard include to:

1. Monitor ditch and cutbank stability during road construction and harvesting;
2. Armour crossings to prevent sediment delivery to streams;
3. Assess BUR02 by a terrain specialist to determine the landslide and sedimentation risk;
4. And, deactivate (preferably, rehabilitate) roads no longer needed after harvesting.

---

[2] Interior Watershed Assessment Procedure Guidebook (IWAP, Forest Practices Code of British Columbia, April 1999.

Other

Other recommendations for BU-23 include:

- Retain windfirm leave strips, where possible, around intermittent streams in BU-23 to protect the riparian area and streambank stability. If windthrow is a concern, then harvest to the banks;
- Assess the landslide and sedimentation risk of BU-23 by a terrain specialist for the south portion of the block that drains to potentially unstable terrain in the residual area of the Porcupine Creek sub-basin..

CONCLUSION

There is a localized high peak flow hazard in the Dog Creek watershed. The hazard should be assessed in relation to channel stability, the status of the POD and sedimentation.

For planning purposes, it would be useful to update the ECA in the entire Dog Creek watershed.

Sincerely,

Greg Henderson

per, Greg Henderson, P.Ag., P.H.

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E-mail: [illegible]. [illegible]

August 31, 2005

By electronic mail
Kootenay Timber Sales Office
BC Timber Supply
1907 Ridgewood Road
Nelson, BC
V1L 6K1

Attention: Curt Nixon

Dear Curt:

RE: Hydrologic Hazards in McCormick Creek associated with Proposed Blocks LI11 (A77097-1) and LI14

As requested, this report assesses hydrologic hazards associated with the harvest of proposed blocks LI11 (also known as A77097-1) and LI14 in the McCormick Creek watershed (see Figure 1 for block location). Both blocks are proposed to address stands infested with or susceptible to the fir engraver beetle in grandfir. The following information was reviewed for this assessment:

- Forsite Consultants Ltd. 2005. Terrain Stability Assessment. TSL A77097 Block 1, Limpid Creek. Prepared for BCTS, Castlegar;
- Excerpt of FDP Amendment #11 dated July 4, 2005;
- ECA update by G. Portman, dated February 2005;
- Electronic message from C. Nixon, dated 17 August, 2005, and subsequent phone conversations;
- Map: BCTS 2001-2006 FDP-Arrow TSA/TFL 23. Amendment #1,-Final Submission

This report identifies hydrologic hazards without fieldwork carried out as part of the assessment.

Block LI11

Proposed block area is 40.ha. The Forsite terrain report[1] identifies current instability (slides) along the access road (presumably the McCormick FSR) and within the proposed block itself at old trails. Diverted road drainage is cited as the cause for both slides. The short term recommendation for the access road was ditchline maintenance, and over the long term, the recommendation was to reduce the angle of cutlsopes and deactivate the FSR by installing waterbars and cross-ditches.

Within LI11, Forsite recommendations were to avoid excessive ground scour during yarding operations, and to deactivate trails by installing cross-ditches or waterbars.

Implementing the Forsite recommendations would result in a low likelihood of landslide initiation and a low residual risk associated with proposed harvesting of LI11.

Block LI14

The proposed area of Block LI14 is 25ha (gross). No terrain stability information is available however, based on contours, terrain appears to be gentler than at LI11.

ASSESSMENT AND RECOMMENDATIONS

Watershed-level Hydrologic Hazards

Updated ECA's[2] project an ECA increase of 17.6% above the current ECA of 29.19% associated with the harvest of the two BCTS blocks. The maximum proposed ECA following harvesting will be 46.8% by 2006 (refer to attached ECA tables for details). This represents a significant potential increase in water yield and peak flows within the McCormick Creek watershed. The proposed ECA, and rate of ECA increase itself, represent a hazard for peak flows.

The ECA change is unlikely to significantly affect existing channel conditions in McCormick Creek unless a debris flow is triggered by harvesting activities (e.g. diverted road drainage). The ECA can be used to manage peak flows and assess channel hazards, but in this case, harvesting will proceed regardless of ECA because it is a forest-health issue, and a field channel survey was not carried out. Forsite reports that there is 'no evidence of recent large sediment moving events…' in McCormick Creek; however, it is considered that insufficient information is available to assess the channel hazard associated with proposed harvesting.

The harvest of LI11 alone represents a 10.9% increase in ECA to the total watershed. However, hydrologic impact is primarily around a small un-named tributary in the block. Here, the localized ECA will be even higher than over the total watershed. A significant increase in water yield -and peak flows- can be expected within the micro-basin of the tributary. The potential increase in flows is considered a localized hydrologic hazard. To address the hazard, **it is recommended to**:

- Inspect existing crossings in LI11 to ensure culverts can convey an estimated 30% increase in peak flows associated with harvesting.

---

[1] Although the terrain report indicates the block is located in Limpid Creek/McCormick Creek, it actually is located solely in the McCormick Creek watershed and drains to McCormick Creek.

[2] The current ECA was updated using data from G. Portman plus adding the area of the power line transmission corridor. Proposed ECA's include the two block areas.

The water quality hazard is managed by mitigating sediment delivery to streams from landslides and surface erosion. Implementing the recommendations of this letter and also the recommendations of the Forsite terrain report are useful measures to mitigate the water quality hazard.

Road-Related Hydrologic Hazards

The Forsite report recommendations focus on road drainage issues in order to address slope instability and potential sediment production. However, the Forsite survey was carried out in February, 2005, when roads were covered with snow. Therefore, **it is recommended that** ***prior to harvesting and during snow-free conditions*** to:

1. Verify and stabilize sediment sources along the FSR and Branch roads used to access proposed blocks;
2. Develop a deactivation prescription for the trail within LI11.

The four crossings in LI11 and two crossings in LI14 represent an erosion and sedimentation hazard, particularly because of steep slopes and historical instability linked to diverted road drainage. Recommendations to manage this hazard include to:

1. Monitor ditch and cutbank stability during harvesting;
2. And, to deactivate roads and crossings no longer needed after harvesting.

Hydrologic Hazard Related to BroadCast Burns

Broadcast burning is prescribed to contol brush at proposed blocks. Hydrophobic, or water repellent, soils may develop after burns are linked to burns depending on soil moisture and fire temperatures. Water repellent soils have been recently implicated in causing mass wasting events in the Kootenays (P. Jordan, pers.comm. 2005). The sandy-silt soil texture is an appropriate candidate for development of hydrophobic conditions. The potential formation of hydrophobic soil conditions is therefore an additional landslide hazard, particularly on steep slopes. Options for the management of this hazard include:

1. Minimize burning on steep slopes;
2. Post-fire, create surface roughness, for example, by scarifying the surface prior to planting;
3. Monitor site conditions the summer following the broadcast burn for any indications of water repellency.

CONCLUSION

From a strictly hydrologic perspective, and notwithstanding health issues, further harvest in the McCormick Creek watershed beyond the current plan should be based on field conditions and assessment of hydrologic hazards.

Sincerely,

Greg Henderson

per, Greg Henderson, P.Ag., P.H.

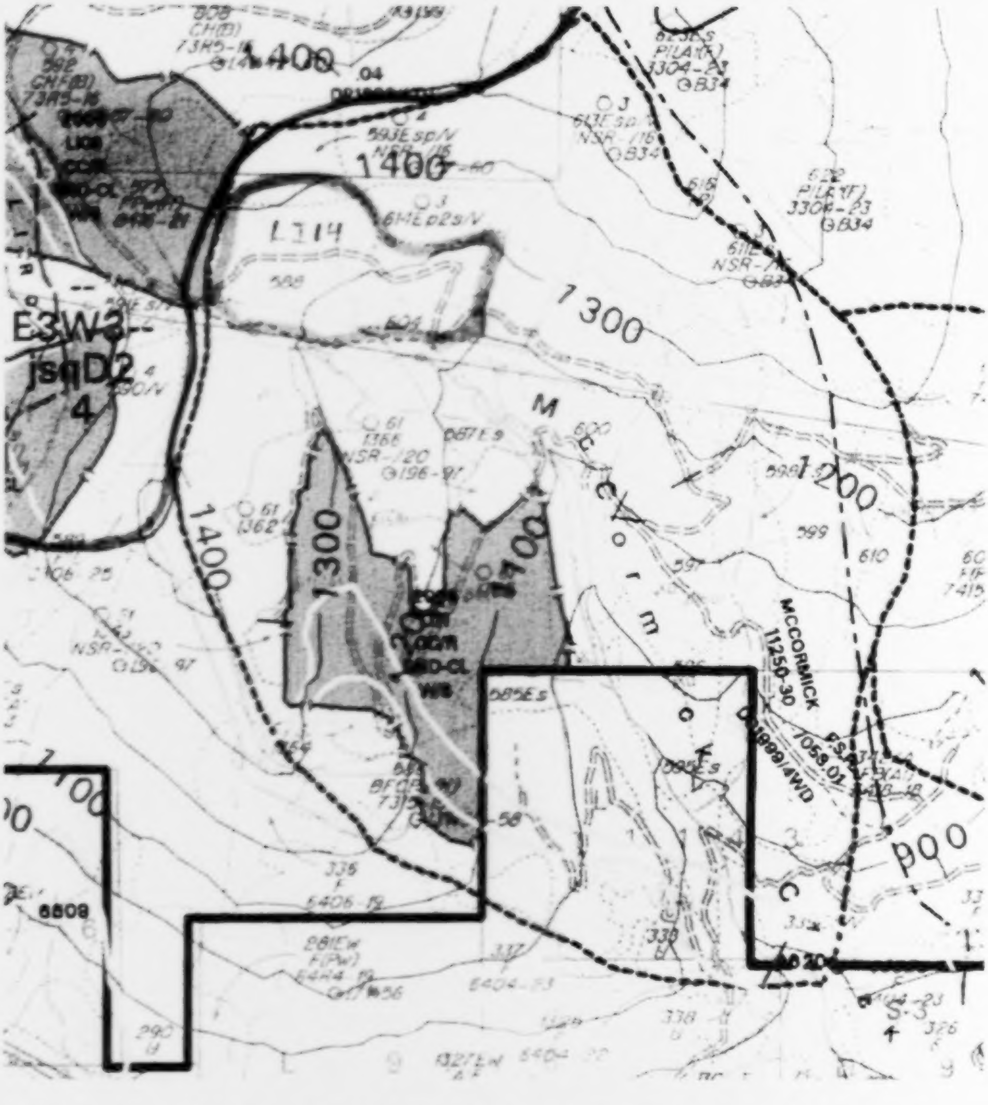
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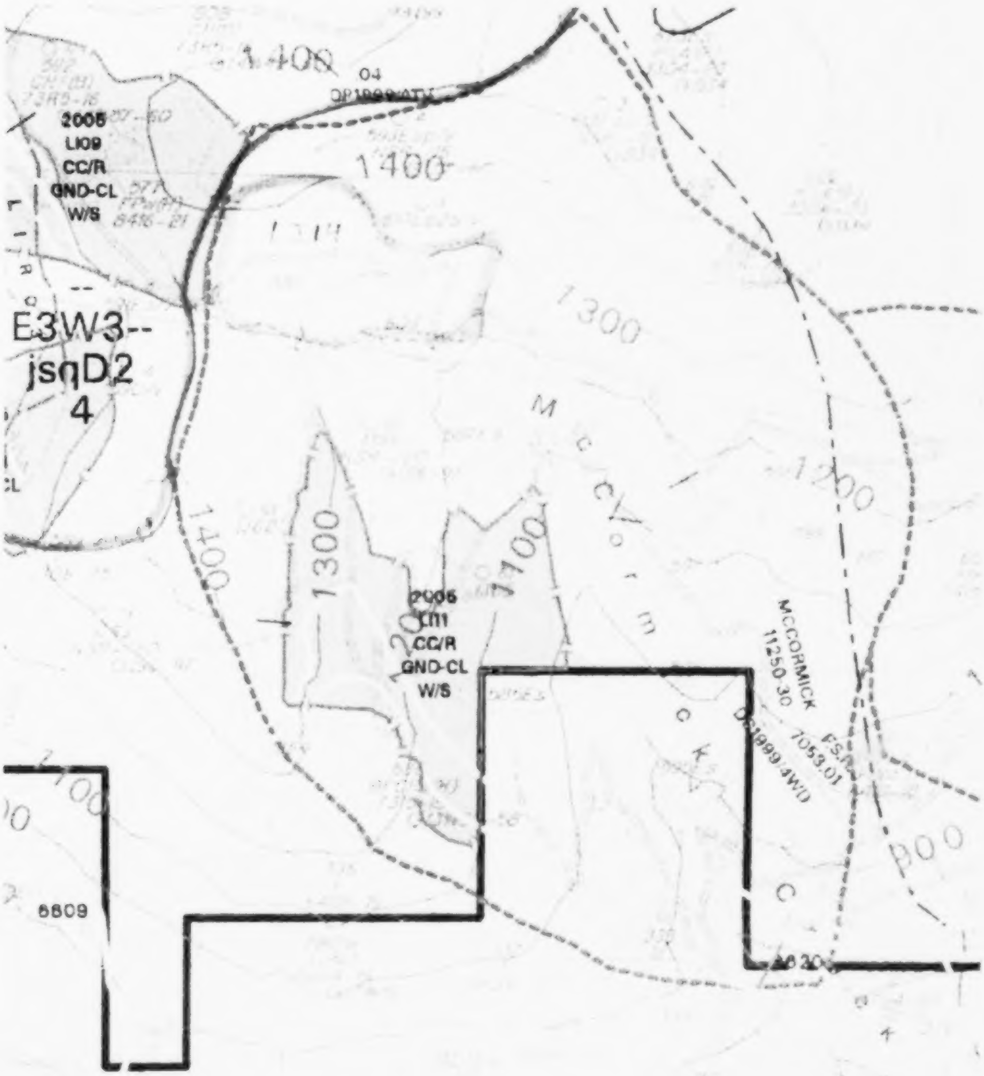
Figure 1. Map of McCormick Creek watershed (border in purple dashed line). BCTS proposed blocks are LI11 (purple block in lower watershed) and LI14 (pencil text in upper watershed).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MCCORMICK
11250-30
FSR
7053.01
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6809

Figure 1. Map of McCormick Creek watershed (border in purple dashed line). BCTS proposed blocks are LI11 (purple block in lower watershed) and LI14 (pencil text in upper watershed).

Table	ECA (ha) for McComick Creek Watershed									
1	existing	proposed plus existing								
SUB-BASIN	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Watershed	108.30	173.70	173.70	164.20	164.20	164.20	159.20	159.20	159.20	159.20

Table	ECA (%) for McComick Creek Watershed									
2	existing	proposed plus existing								
SUB-BASIN	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Watershed	29.19	46.82	46.82	44.26	44.26	44.26	42.91	42.91	42.91	42.91

Table	ECA (%) above H60 elevation for McComick Creek Watershed									
3	existing	proposed plus existing								
SUB-BASIN	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Watershed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table	ECA (%) under H60 elevation for McComick Creek Watershed									
4	existing	proposed plus existing								
SUB-BASIN	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Watershed	29.19	46.82	46.82	44.26	44.26	44.26	42.91	42.91	42.91	42.91

Table	Total available ECA (ha) for McComick Creek Watershed									
5	existing	proposed plus existing								
SUB-BASIN	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Watershed	3.00	-62.40	-62.40	-52.90	-52.90	-52.90	-47.90	-47.90	-47.90	-47.90

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EXISTING OPENINGS for McComick Creek Watershed

CP-block	Opening Polygon	Comments	Year Harvested	Area (ha)		Tree regeneration survey data		
				<H60 elevation	>H60 elevation	Leader Length (m)	Year of Survey	Tree height (m)@survey
	61-1365			3.00			2001	0.00
	61-1366			3.00			2001	0.00
	339			7.00			2001	10.00
	585			15.00			2001	24.90
	586			96.00			2001	24.90
	592			11.00			2001	0.00
	593			6.00			2001	27.00
	597			15.00			2001	33.00
	598			5.00			2001	33.00
	599			11.00			2001	33.00
	600			16.00			2001	33.00
	601			16.00			2001	33.00
	604			1.00			2001	33.00
	3-611			3.00			2001	0.00
	3-613			33.00			2001	3.00
	3-614			5.00			2001	3.00
	623			0.00			2001	23.10
	627			0.00			2001	23.10
	Line	Trans. Line		18.00		0.00		

EXISTING ROADS

year

Roads	Length (km)		Road width if different from default
	<H60 elevation	>H60 elevation	
Main			20
Secondary	23.00		10
Trail			5
Roads in cleared/nsr area, for density:			

H

EXISTING
PROPOSED

Total Area Harvested (ha)	287.00

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PROPOSED OPENINGS for McComick Creek Watershed

Licensee	CP/Block	Comments	Year of Harvest	Area (ha)		Tree survey data IF previously harvested		
				<H60 elevation	>H60 elevation	Leader Length (m)	Year of Survey	Tree height (m)@survey
	LI11		2005	40.40				
	LI14		2005	25.00				

PROPOSED ROADS

	Length (km)		Year of construction
	<H60 elevation	>H60 elevation	
Roads			

CP-

H

EXISTING
PROPOSED

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BRITISH
COLUMBIA

File: 10765-25 2001 FDP

November 4, 2005

Larry Peitzsche, R.P.F.
District Manager
Arrow Boundary Forest District
845 Columbia Avenue
Castlegar, BC
V1N 1H3

Dear Larry:

BC Timber Sales (BCTS), Kootenay Business Area (KBA), hereby submits for review and comment Major Amendment #16 to the 2001-2006 Forest Development Plan for the Arrow Timber Supply Area, Arrow Boundary Forest District.

Major Amendment #16 proposes the construction of approximately 9.6km of road to access beetle infested/susceptible timber on the ridge located between the Porcupine and Hidden Creek drainages located in BC Timber Sales' operating area of Ymir.

Amendment #16 was approved for a 30 day review and comment period and will be made available for public review and comment commencing November 10, 2005 and ending December 9, 2005. Comments received from concerned stakeholders during this time period will be incorporated into the final submission.

If you have any questions or comments regarding this plan please call the undersigned at the Kootenay Business Area Office (250-825-1132).

Yours truly,

Curt J. Nixon, RPF
A/ Planning Forester
BC Timber Sales
Boundary –Arrow Field Units

Attachment: Amendment # 16 Review and Comment Submission

Ministry of Forests and Range and Ministry Responsible for Housing
Kootenay Lake Forest District

Location:
1907 Ridgewood Rd,
Nelson, B.C. V1L 6K1

Mailing Address:
1907 Ridgewood Rd,
Nelson, B.C. V1L 6K1

Tel: (250) 825-1100
Fax: (250) 825-9657

Arrow Boundary Forest District
Arrow Timber Supply Area (TSA) BC Timber Sales 2001-2006
FOREST DEVELOPMENT PLAN (FDP- the Plan)
MAJOR AMENDMENT #16: Porcupine Creek

Initial Submission Date: Thursday, November 10, 2005

Final Submission Date: XXXXXXXXXXXX

Amendment: #16 is a mandatory amendment submitted in accordance with Section 39(2) of the *Forest Practices Code of British Columbia Act* and Section 7 of the *Operational and Site Planning Regulation* (OSPR).

BC Timber Sales requested a shortened review and comment period for this amendment in accordance with Section 27(5) of the OSPR on September 26th, 2005 to request approval to construct 9.6 kilometres of road in the Porcupine Creek drainage to address mountain pine beetle infestation sites in BCTS' operating area.

This request for a reduced review and comment period (30 days) was approved by the District Manager of the Arrow-Boundary Forest District on September 29th, 2005.

This amendment reflects an improved total chance road location from what was shown on the original plan approval. During the summer of 2005, BC Timber Sales completed a Total Chance Plan (TCP) for the Hidden-Porcupine Creek area. Amendment # 16 reflects this planning in relation to the total chance road location.

The original plan approval indicated that the Porcupine 10 Mainline location (previously approved in the plan as YMR-05, Br 2) was to commence within the Hidden Creek domestic watershed and climb the slope northward, toward Porcupine Creek. This location required passage through very challenging terrain (steep and very rocky ground).

As a result of the TCP, the proposed new location of the Porcupine 10 Mainline will access the ridge from Porcupine Creek, climbing the face unit, southward, and then connecting into the upper segment of the previously approved YMR-05 Br 02, which will now be known as the Porcupine 10 mainline.

The revised road location of the Porcupine 10 Mainline is anticipated to be a more economical alternative to access the identified beetle-infested stands and is not anticipated to have any significant impact on the Hidden Creek domestic watershed water quality, quantity or timing of flow.

The proposed road construction is to provide timely access for the expedited salvage and control of identified mountain pine beetle infestation sites. The proposed development and recent policy changes have resulted in some changes and additions to the original FDP text. The following sections of the Arrow-Boundary Timber Supply Area 2001-2006 FDP (the plan) have been amended:

Section 1.4: Referral Process
Section 3.2: Biological Diversity Update
Section 3.2.2: Old and Mature Forest and Regional Connectivity
Section 3.3: Water
Section 3.3.2: Watershed Assessments- Domestic Watersheds
Section 3.3.3: Measures to Manage and Protect
Section 3.6: Wildlife
Section 3.8 Visual Landscape Management
Section 5.0 Access Management Table- Consistency with Required Assessments
Section 7.0 Advertisements
Section 8.0 Review and Comment/Documentation and Referrals
Section 9.0 Summary of Changes- Changes made as a result of the Review and Comment (in Final Submission)
Section 10.0 Map: Ymir composite Map.

The following information is attached:

Appendix B - Engineering Access Management Table
Appendix K – Legal Advertisements (Copies in Final Submission)
Appendix L – Referrals, Comment and Review Comments (including copies of letters received and responses made in Final Submission)
Appendix M – Summary of Changes made to this plan amendment as a result of Review and Comment- in Final Submission
Appendix O- Forest Health Rationale Table

Reason for Amendment:

Under this amendment, BC Timber Sales (BCTS) seeks approval to construct approximately 9.6 kilometres of road to provide timely access to address known Mountain Pine Beetle infestation sites. Expedited road construction in the Porcupine Creek area will provide BCTS the opportunity to minimize the loss, damage or destruction in timber values of these infested/susceptible stands.

In support of this amendment, BCTS has completed two supporting documents (which are available under separate cover): The first document is the Hidden-Porcupine Total Chance Plan (TCP) (Interim Phase II Report, October 5th, 2005) which will serve to guide future road development and cut block planning in the Hidden -Porcupine Creek Drainages. The second document is the Pine Management Priority Report - conducted in the fall of 2004 and completed March

2005 - (the mountain pine beetle -IBM strategy).

BCTS proposes to utilize the susceptibility ratings provided by the IBM strategy in combination with overview flights and ground surveys to commence a proactive planning initiative to be in a position to address beetle populations as the infestations move into the identified susceptible stands.

The proposed road segments identified in Amendment #16 have been developed in accordance with the TCP and the IBM strategy. At the request of the Arrow/ Boundary District staff at previous FDP Round Tables, BCTS has also provided additional supporting forest health rationale for the proposed road construction. Details are provided in Appendix O.

The proposed development has resulted in some changes and additions to the original FDP text which are identified below:

Description of the Amendment:

1. The following table shows the additions to the plan of the following road segments required to provide access to address Mountain Pine Beetle infestation sites and stands of susceptible timber:

Mapsheet #	Location	Length of proposed road added to the Plan
Ymir	Porcupine Creek (Porcupine 10 M/L)	8.6 km
Ymir	Porcupine Creek (Porcupine 9000)	1.0 km
		Total: 9.6 km

2. Further details of the proposed development are shown on the Engineering Access Management Table (Appendix B).

Brief Highlight of Changes and Rationale:

Map Updates: Ymir Basemap. BCTS has updated the activity status on blocks YM11, YM12 and YM13, Oscar Creek.

Map and Table additions: BCTS has added/revised the locations of the following proposed roads:

- Porcupine 10 M/L – the new location that reflects the TCP location has been added. Under Amendment #16, BCTS is requesting approval to construct the first 8.6 km, with the remainder shown as a Category I road.
- Porcupine 9000 – the new location that reflects the TCP location has been added. Under Amendment #16, BCTS is requesting approval to construct 1.0 km. Spur YMR-02 Spur B approved in the plan, will be replaced with Porcupine 9000.

Expedited road construction in Porcupine Creek will provide BCTS the opportunity to minimize the loss, damage or destruction in timber values of the infested stands or stands of timber identified as susceptible stands.

Additional map details: BCTS has added the following Cat "I" proposed blocks and associated Cat "I" roads: YM14 and YM15. No review or comment is requested for these areas at this time.

The following statements are to be added to the FDP text:

Measures to Protect-General

The general measures to protect non-timber resources described in the BC Timber Sales Arrow TSA 2001-2006 FDP dated September 20, 2001 (date of final revisions) apply to the proposed roads contained herein.

Section 1.4 Referral Process

Activity	**Date (yyyy/mm/dd)**	**Location (and media with respect to Public Review)**	**Comments Received (Y/N)**	**Date (yyyy/mm/dd)**
Submission of Amendment 16				
Ministry of Forests	**2005/11/10**	Arrow Boundary Forest District	**Pending**	**Pending**
Public Review	**2005/11/10**			
Advertising (first publication) See Appendix K	**2005/11/10**	Nelson Daily News - Nelson, BC Trail Daily Times – Trail, BC Pennywise – Salmo/Beaver Valley Edition Ministry of Forests - Official Notices Website BC Gazette	**Pending**	**Pending**
Deadline for Comments	**2005/12/09 at 4:30 pm Pacific time**	Kootenay Lake Forestry Centre, Nelson, BC	**Pending**	**Pending**
Referral Letters:				
Agencies:				
Land & Water BC	**2005/11/10**	Kamloops, BC	**Pending**	**Pending**
Energy and Mines		Cranbrook, B.C.		
First Nations:				
See list in Appendix L	**2005/11/10**	Various	**Pending**	**See Appendix L**
Affected Stakeholders:				
Trappers	**2005/11/10**	See list in Appendix L		**See Appendix L**
Water License Holders				
Final Submission for Approval (if necessary)	**TBD**	Arrow Boundary Forest District		
Anticipated Approval Date	**TBD**			

Amendment #16 for the Arrow Boundary Forest District was advertised on the Ministry of Forests - Official Notices Website, the BC Gazette and in following local newspapers: the Trail Daily Times, Nelson Daily News and the Pennywise-Salmo/Beaver Valley editions. Copies of legal advertisements are located in Appendix K (final submission only).

Referral letters have been sent to a number of individuals, licensed resource users, First Nations, government agencies, and any applicable organized groups. A referral list is provided in Appendix L along with samples of letters sent to indicated parties.

Any responses that will be received from interested parties during the Review and Comment period will be provided in Appendix L upon Final Submission.

First Nations Communications in regard to Arrow TSA - Amendment #16

BCTS applied for and received a reduced review and comment period of 30 days for Amendment #16. To ensure First Nations received adequate time to review the amendment, BCTS committed to emailing and phoning First Nations ahead of time, to advise them of the reduced advertising period.

Scott Blissett, RPF, sent an email to all First Nations indicated in Appendix L on October 12th, 2005. This email was designed to provide First Nations with advanced notice that Amendment #16 has an approved 30 day review and comment period. Scott Blissett then followed this email up with a phone call to each of the First Nations contacts listed below, which explained the nature of Amendment #16 and the approved 30 day review and comment period. The table below summarizes those phone calls.

Table 1
First Nations Contacts

Okanagan Nation Alliance	Phone call, October 11th, 2005. Notified Charlotte Armstrong that Amendment #16 will have a reduced advertising period of 30 days and indicated the referral letter and overview map regarding this amendment will be arriving shortly. Charlotte asked that the referral letter be sent to Pauline Terbasket.
Lower Similkameen Indian Band	Phone call, October 11th, 2005. Notified receptionist that Amendment #16 will have a reduced advertising period of 30 days and indicated the referral letter and overview map regarding this amendment will be arriving shortly. Left name and number with receptionist. Asked that Lisa return my call if there are any immediate questions.
Okanagan Indian Band	Phone call, October 11th, 2005. Notified Jennifer Louis that Amendment #16 will have a reduced advertising period of 30 days and indicated the referral letter and overview map regarding this amendment will be arriving shortly. She indicated that she would keep an eye out for the letter.

Osoyoos Indian Band	Phone call, October 11th, 2005. Voicemail message indicating that Amendment #16 will have a reduced advertising period of 30 days and indicated the referral letter and overview map regarding this amendment will be arriving shortly. Fax sent on October 12th, 2005 to ensure effective correspondence (see Appendix L).
Penticton Indian Band	Phone call, October 11th, 2005. Notified Greg Gabriel that Amendment #16 will have a reduced advertising period of 30 days and indicated the referral letter and overview map regarding this amendment will be arriving shortly.
KKTC	Phone call, October 11th, 2005. Notified Ray Warden that Amendment #16 will have a reduced advertising period of 30 days and indicated the referral letter and overview map regarding this amendment will be arriving shortly. Ray indicated that he had received the previous email regarding Amendment #16 and appreciated the verbal "heads-up". His major concern was weather the proposed development will adversely affect available wood for FRPA tenure potential.
Lower Kootnenay Band	Phone call, October 11th, 2005. Notified Curtis Wullum that Amendment #16 will have a reduced advertising period of 30 days and indicated the referral letter and overview map regarding this amendment will be arriving shortly. He requested that the referral letter be sent to Ray Warden who would forward any information he deemed necessary.
Westbank First Nation	Phone call, October 11th, 2005. Voicemail message indicating that Amendment #16 will have a reduced advertising period of 30 days and indicated the referral letter and overview map regarding this amendment will be arriving shortly. Fax sent on October 12th, 2005 to ensure effective correspondence (see Appendix L).
Spallumcheen Indian Band	Phone call, October 11th, 2005. Notified Ida Alexander that Amendment #16 will have a reduced advertising period of 30 days and indicated the referral letter and overview map regarding this amendment will be arriving shortly.

In addition to the telephone calls BCTS sent referral letters and a general location map to all First Nations on the list above. A copy of these letters is attached in Appendix L.

BCTS awaits comment from First Nations in regard to this Amendment.

BCTS feels that we have provided ample opportunity through phone calls and emails for First Nations to provide comment on Amendment #16. In addition, we have indicated in our referral letters that consultation with the district is available (i.e. through Ted Evans – MOF Arrow/Boundary District).

Section 3.1.1 Measures to Protect Forest Resources: Timber

Issues

Mountain pine beetle attack in lodgepole pine continues to be the largest cause of catastrophic timber mortality within BCTS' operating areas. Aerial overview surveys, ground reconnaissance and detailed susceptibility mapping conducted over the BCTS' operating areas in 2004 and 2005 confirm on-going heavy mountain pine beetle attack throughout the areas identified in this amendment. The Hidden-Porcupine TCP – October 5, 2005 also confirms additional green attack infestations along the proposed road right of way.

Measures to Manage and Protect

As mentioned in the introduction, BCTS proposes to address beetle infestations through priority harvesting of the infested timber and to seek approval to develop timber at risk- identified in BCTS' Pine Management Priority Plan conducted in the fall of 2004.

Harvesting of infested timber is prioritized for those stands with confirmed infestations of mountain pine beetle located in the Porcupine Creek Drainage.

The Pine Management Priority Report (the IBM strategy) prepared by Sattva Consulting in March of 2005 identifies priority stands for harvest. This strategy is designed to provide BCTS and the District Manger of the Arrow-Boundary Forest District with a comprehensive and practical plan to address mountain pine beetle susceptible stands in the short to mid-term (5-10 years).

Amendment #16 is consistent with the strategy and is designed to facilitate access to identified stands in the Porcupine Creek drainage.

Section 3.2.2 Measures to Protect Forest Resources: Biodiversity Targets

Objectives for the distribution of old and mature-plus-old seral stages are established in the Kootenay Boundary Higher Level Plan Order (KBHLPO). This order requires that all proposed harvest blocks be assessed against availability of forest cover age classes to ensure achievement of seral stage targets for each landscape unit.
Biodiversity target analysis was not required for this amendment as there are no proposed cutblocks.

BC Timber Sales has applied KBHLPO Variance #06 which permits the harvesting of infested timber, despite the requirement of objective 2 of the KBHLPO.

Section 3.2.2 Measures to Protect Forest Resources: Old Growth Management Areas

BC Timber Sales is working closely with the Ministry of Agriculture, Integrated Land Management Bureau (ILMB) representatives to rationalize conflicts between the proposed Old Growth Management Areas (OGMAs) and the proposed BC Timber Sales development within Porcupine and Hidden Creek Creek drainages.

Amendment #16 proposes 9.6 km of new road construction. This construction does not impact proposed OGMAs.

Section 3.3.2 Watershed Assessments

Under Amendment #16 development is proposed within Hidden Creek domestic watershed.

Domestic Watersheds:

Section 3.3.3 Measures to Manage and Protect

The proposed location of Porcupine 10 Mainline and Porcupine 9000 spur outlined in Amendment #16 is significantly shorter in total length than the proposed road system that was approved under the previous FDP amendment.

BCTS has completed an Equivalent Area Cut (ECA) snapshot update to provide an estimate of the overall ECA since the last watershed report card was completed in 2001. Results are summarized below.

	ECA (%) for Hidden Creek Watershed									
	existing	***proposed plus existing***								
SUB-BASIN	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Watershed	**26.98**	**33.36**	33.36	33.36	33.36	33.36	33.36	33.36	33.36	33.36
1	37.06	37.06	37.06	37.06	37.06	37.06	37.06	37.06	37.06	37.06
2	17.15	17.77	17.77	17.77	17.77	17.77	17.77	17.77	17.77	17.77
3	50.64	50.64	50.64	50.64	50.64	50.64	50.64	50.64	50.64	50.64
4	42.36	48.74	48.74	48.74	48.74	48.74	48.74	48.74	48.74	48.74

The total length of proposed road within the Hidden Creek domestic watershed boundaries is approximately 1100m. No significant impacts are anticipated on the existing total ECA (≈27%) as a result of the proposed roads.

Section 3.6 Measures to Protect Forest Resources: Wildlife

The proposed road development in Porcupine Creek is not located within known ungulate winter range planning cells.

Section 3.8 Visual Management:

The revised location of the Porcupine 10 Mainline (formerly approved as YMR-05 Br 02) will utilize natural terrain features where available, to minimize the visual impact to the scenic corridor. It is anticipated that the visual quality objective(s) for the polygons that the proposed roads traverse will be achieved.

5.0 Access Management-Road Construction, Modification and Assessment Table

For proposed roads where terrain stability field assessments, flat over steep assessments, or soil erosion field assessments are required, planned developments will be consistent with the results and recommendations of these assessments.

7.0 Advertisements

Amendment #16 for the Arrow Boundary Forest District was advertised on the Ministry of Forests - Official Notices Website and local newspapers including the Trail Daily Times, Nelson Daily News and the PennyWise - Salmo/Beaver Valley edition. Copies of the legal advertisements will be located in Appendix K upon Final Submission of this Amendment.

8.0 Review and Comment/Documentation and Referrals

Referral letters, along with an accompanying suitable scale map (as appropriate) have been sent to those individuals and organizations identified in Appendix L. Comments will be incorporated into the Amendment # 16 upon final submission.

9.0 Summary of Changes

Written comments received will be addressed and identified as changes where appropriate. A Summary of Changes will be presented in Appendix M upon final submission.

10.0 Maps:

An updated copy of the following map is included with this document. The mapsheet has been updated to show new proposed development and to update the status of existing openings within BC Timber Sales operating areas.

- **Mapsheet**: Ymir

To the best of my knowledge, this proposed amendment meets the requirements of the Forest Practices Code of British Columbia Act (FPCA), the regulations, and the instructions to the Arrow Boundary District Licensees with regards to FDP standards.

I request that you review FDP Amendment #16 and if it meets with your satisfaction, that you give effect to this amendment in accordance with Section 41 (1) of the FPC of BC Act.

I certify that I have reviewed this document and, while I did not personally supervise all the work described, I have determined that this work has been done to standards expected of a member of the Association of BC Forest Professionals.

Certified by (RPF):
Consulting Forester preparing this plan

____

Date: ________________________

BCTS Planning Forester (RPF)
Acknowledgement:

____

Date: ________________________

Approved By:
Section 41(1) of the FPC of BC Act

____
District Manager
Or Authorized Person

Date: ____________________

APPENDIX B ENGINEERING ACCESS MANAGEMENT TABLE - Arrow BCTS 2001-2006 Forest Development Plan - AMENDMENT #16

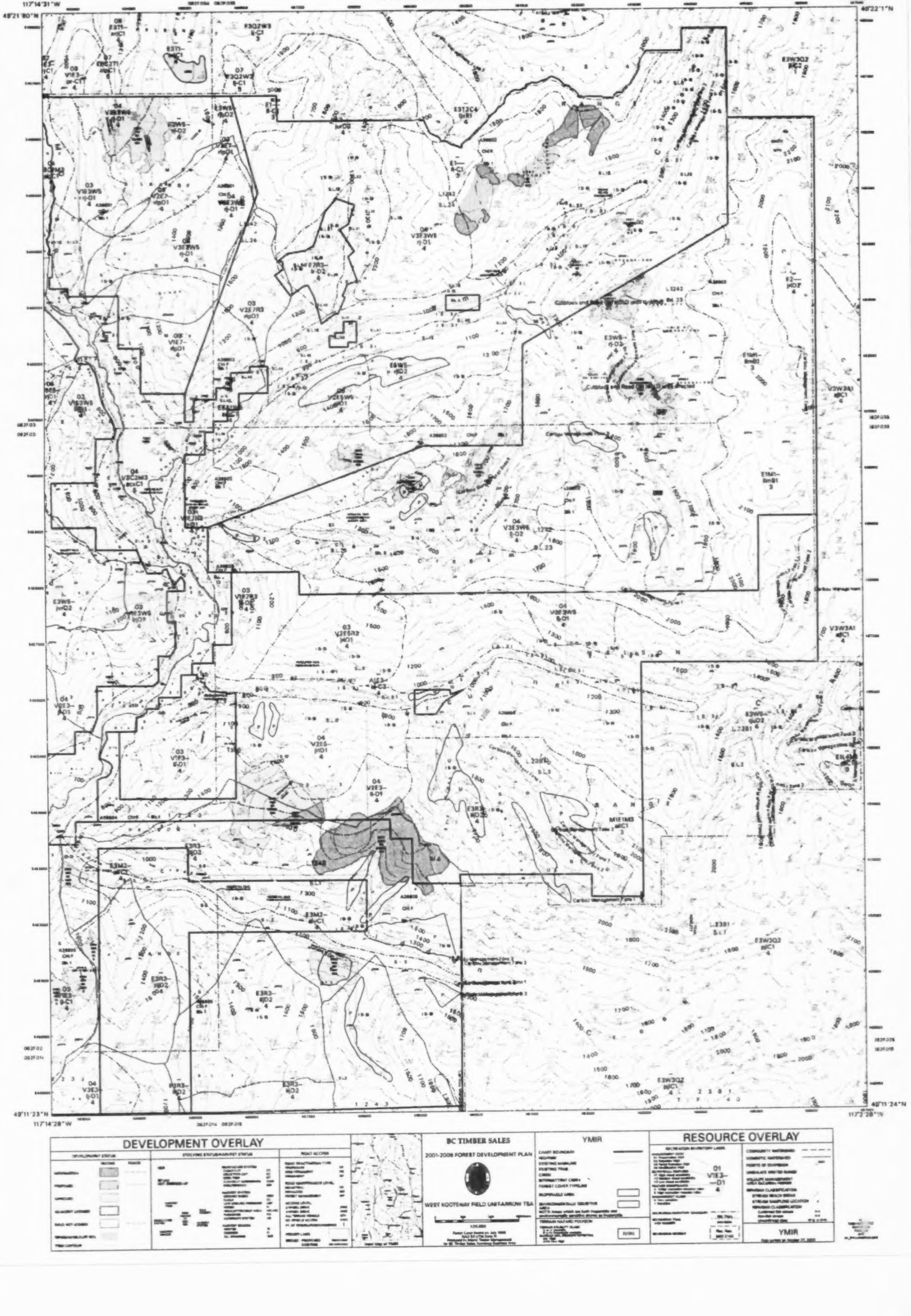
Map Reference	FSR # 11250-30- Name or TSL #	Branch/ Spur	Prim. Resp.	Type of Road	Length/ Location Nearest 0.1 km	Current Access Level	Type /Year Works Proposed			Proposed Access Level	Bridges and Culverts over 2,000 mm	Terrain Stability Field Assessment	Cultural/ Heritage/ Archaeological Impact Assessment	Visual Impact Assessment	Surface Soil Erosion Assessment	Stream Wetland and Lake Riparian Class	Dev. Status	Joint Sign-off / Approval
							C	M	D									
Ymir	0219 - Porcupine	Porcupine 10 M/L - YMR 05	BCTS	Perm	8.6	N/C	2005	2005		MI	N/A	Required	Required	Required	N/A	S-6	P	N/A
Ymir	0219 - Porcupine	Porcupine 9000 - YMR 02	BCTS	Perm	1.0	N/C	2005	2005		MI	N/A	N/A	N/A	N/A	N/A	N/A	P	N/A

Perm: Permanent Road
N/C: Not Constructed (newly proposed road)
MI: Maintain Industrial Access
P: Proposed

Map Ref. No. (BCGS)	Geographic Location	TSL-Blk or Map ID and Unit#	Gross Area (0.1ha)	Vol m3/ha (All Species)	Vol m3 (Pl>12.5cm)	LU	Timber Type	Age	Bark Beetle	Infest. Level %	Green to Red ratio	Survey Type	Survey Date	Suscept and Risk Rating	Other Forest Health Factors	Treatment Schedule	Rationale	Source of Rationale
82F024 82F025	Hidden-Porcupine Creek (Ymir)	Porcupine 10 M/L Porcupine 9000	18.2*	205 m3/ha **	Not Available at this time	N505	Variable	Ranges from age class 4 to age class 6	IBM	Variable	Not Available at this time	Hidden-Porcupine Creek Total Chance Plan	July to October 2005	A number of areas have high to very high incidence of IBM green attack, whereas grey attack levels are predominantly low to moderate within the majority of the polygons (approximate average of 5% grey attack) **	None Noted	Fall 2005 start-up. Continuation of road construction into the winter in order to access MPB attacked stands in the summer of 2006.	Hidden-Porcupine Total Chance Plan, Interim Phase 2 Report prepared by Timberland Consultants Limited, October 5th, 2005 indicates several polygons where pine is greater than 50 percent using both VRI information and field-truthing. The majority of the Pl types show at least a minor occurrence of IBM within the polygons, with some types having heavily concentrated areas of IBM activity. Prompt road construction is required to access the developing IBM infestation	Hidden-Porcupine Total Chance Plan, Interim Phase 2 Report, Timberland Consultants Limited, October 5th, 2005

*based on 9.1 kilometres of road with a 20 metre right-of-way
** from TCP

BC Timber Sales 2001-2006 FDP-ARROW TSA/TFL 23
Review and Comment AMENDMENT #16


117°14'31"W
49°21'60"N
117°2'29"W
49°22'1"N
49°11'23"N
117°14'28"W
49°11'24"N
117°2'28"W
082F.034
082F.035
082F.03
082F.02
082F.014
082F.015
DEVELOPMENT OVERLAY
BC TIMBER SALES
2001-2006 FOREST DEVELOPMENT PLAN
WEST KOOTENAY FIELD UNIT-ARROW TSA
1:20,000
YMIR
RESOURCE OVERLAY
01
V1E3-
-D1
4
YMIR